EDITORIAL
DOMESTIC ENGINEERING

Whole No. 1516 CHICAGO, DECEMBER 31, 1921 Vol. 97, No. 14

AT THE CROSSROADS OF BUSINESS—TURN TO THE RIGHT

IN the life of any business as in the life of any individual there are main crossroads where it is possible to either change direction or to continue on the same road. The end of one year and the beginning of another is one of the main crossroads in the life of a business, just as it is in the life of an individual, because the business is dependent upon the persons conducting it. Of course, it is possible to ignore the crossroads and keep straight ahead, which is what the individual does if he is fully satisfied or, not being satisfied, has not the vision and the courage to change. New Year resolutions have gone out of vogue. Making a lot of promises or a lot of impossible resolutions mean nothing. But at the same time, it is a very good idea at this time of the year to look back over the past twelve months in order to get a clear mental picture of what has been accomplished, what has not been accomplished, and what might have been done in the light of our present information. By getting these things clearly before us we will best be able to discover just where we succeeded and where we fell short, and thus be in a better position to plan intelligently for the coming year. Let us compare our own efforts with those of others in the same field who have been successful, and if we have not had the measure of success that we feel is due us, we may thus be able to learn why.

The success or failure of any particular business depends primarily on those in charge of it, rather than on conditions in general. This has been clearly shown during the past year by firms that have had a full measure of prosperity in various lines of business that have been generally considered as dull. At the beginning of last year a large morning daily, the Chicago Tribune, started the slogan "1921 will reward fighters." The soundness of this statement has been thoroughly proved during the past year. Fight alone, however, did not do it, but fight together with the ability and the courage to see things as they were, intelligent direction, and initiative did bring the reward of successful business. The same qualities will bring like results during the coming year. It is not likely that the contractor is going to be swamped with orders for plumbing and heating that will come unsolicited. On the contrary, he is likely to find himself singing a leading part in the "Business is rotten" chorus unless he goes out and brings in the business.

This country is considerably behind in its building program, both in homes and commercial structures. A certain amount of this work must be done during the coming year, but a great deal of it may be put off. The amount that is going to be put off and the amount that is going to be done will depend to a great extent on the initiative and the forcefulness of those engaged in that work. The past few years have witnessed a great awakening within the plumbing and heating industry, particularly among the contractors to the importance of aggressive modern business methods. They conducted well planned advertising campaigns, they have organized or supported with their hearty co-operation, various movements for showing the public the importance of the highest degree of sanitation and well regulated heat. They have shown the public what part the plumbing and heating contractors have played in bringing about the present standards and what they are trying to do to improve conditions still further. Some contractors have stood idly by and have done nothing to help in these movements, and some have disapproved and even tried to hinder this work. This is a good time to initiate business building ideas and to support wholeheartedly other movements already in existence that have for their purpose the educating of the public, the advancement of the trade, and the increasing of business for the plumbing and heating contractor. Now that we are again at the main crossroads, let those who have held back get out of the rut, turn to the right, and join the procession of progressive business builders. There is plenty of business to be had for those who go after it, as has been proved during the past year. Attend your conventions and collect as many good ideas and obtain as much information as possible, take an active part in the work of your local association, and back the progressive movements that build business.

Thus, 1922 will be a happy and prosperous one, which Domestic Engineering sincerely wishes all its readers.

INSTALLING PLUMBING *and* HEATING *on the* PART-PAYMENT PLAN

Details of the Plan Designed and Used by August Buschmann & Sons, Inc., Indianapolis, Ind., Showing Forms Used, Together With Statements Regarding the Operation of the Plan Up to the Present Time

ANYTHING that will help to build up the plumbing and heating business, providing that it is sound and practical, has always received the hearty support of "Domestic Engineering." In keeping with this policy there appeared in the columns of this journal during the past year a number of articles dealing with the practicability of adopting some form of a part-payment plan in the plumbing and heating business. In the November 12th issue of "Domestic Engineering" a brief description was given of the plan adopted by the jobbing firm of August Buschmann & Sons, Inc., of Indianapolis, Ind., through the use of which the plumbing and heating contractors of that city might take advantage of a local situation and install pumbing and heating on a part-payment scheme. Since the appearance of this article the Buschmann company and "Domestic Engineering" have been beseiged with requests for more complete details of the plan. These requests have come from all parts of the United States and Canada and indicate that all branches of the plumbing and heating industry are deeply interested in this movement. In order that all may have as full information as possible of the plan as used in Indianapolis, we have had our correspondent in that city secure from the Buschmann company all the details together with the forms used, all of which appear in this article except the partnership and corporation application for credit forms which are essentially the same as the one shown for individuals.

A noticeable increase in business for plumbing and heating contractors.

A better grade of material and fixtures being sold to customers.

Plumbing and heating contractors taking less chances on their credit accounts.

Realization by plumbing and heating contractors of the value of advertising.

The foregoing are some of the results that have been accomplished in the plumbing and heating industry in Indianapolis during the last few weeks through the plan introduced by the plumbing and heating supply house of August Buschmann & Sons, Inc., whereby persons who have a reputation for meeting their obligations may have plumbing and heating jobs installed in their homes and take their time to pay for them.

The plan, known as the Buschmann Payment Plan, operates in much the same way as the deferred payment system used by dealers in washing machines, phonographs and automobiles, and although in operation only a few weeks, has already demonstrated some of the good things that are bound to result from it.

"We have found," said Alfred W. Buschmann, president of the Buschmann concern, "that an entirely unexplored field of work is being opened up for the plumbing and heating industry in this locality, which, when developed, is going to mean a big increase in business for all concerned. We have found also that quite a number of prospects have become interested in plumbing because it can be bought on the payment plan, but after receiving estimates on the work have made their contracts on a cash basis."

The inspiration for the Buschmann Payment Plan came to Mr. Buschmann following a dinner given by his firm to the master plumbers of Indianapolis at the Chamber of Commerce on the night of August 26. Frank C. Jordan, of the Indianapolis Water Company, who was one of the speakers at the dinner, referred, at the close of his address, to the success that an electrical utility in Cleveland had enjoyed through a plan by which its patrons could buy their electrical appliances and installations on payments.

"The Indianapolis Water Company, the plumbing and heating contractors and the plumbing and heating jobbers have been asleep at the switch," said Mr. Jordan. "However, it is my hope that some time a plan of this kind, with the plumbers co-operating, can be worked out in Indianapolis."

These remarks set Mr. Buschmann and the other members of his concern to thinking, and the Buschmann Payment Plan was the result. After working out a general plan, the proposition was presented to several banks and finance companies and an arrangement for its operation was made with the Indianapolis branch of the Morris Plan Bank. Then, after having the entire plan carefully examined and passed on by several prominent attorneys, the firm gave another "get-to-gether" meeting and dinner for the master plumbers and presented the plan for their consideration. Following this a general advertising campaign was agreed on and carried out.

The Buschmann concern's plan was formulated and announced publicly at precisely the psychological time to assure it wide publicity and subsequent success. The Indianapolis city council had just passed an ordinance which, within the next year, will compel thousands of property owners in the city to spend from $250 to $500 to meet its requirements, and the financial phase of this had become a source of worry to many citizens, particularly the small home owners. The ordinance in question requires the installation of sanitary plumbing or septic tanks as substitutes for open vaults.

Realizing the tremendous opposition to the measure from the small home owners, the two leading candidates for mayor of Indianapolis began attacking the ordinance from a financial standpoint and eventually made it one of the main issues of the city campaign. Each candidate had a supposed remedy. One suggested the formation of a loan company by the leading business men of the city to finance the improvements, and the other advocated postponement of the measure until the next session of the state legislature, at which time a state law giving property owners the right to pay for the improvements in small payments, might be passed.

Right in the heat of this debate between the two mayoralty candidates, the Buschmann concern announced its "payment plan" as the panacea for the supposed ills, and as a result the Buschmann idea soon occupied the spotlight alone. The two candidates ceased to discuss the ordinance and property

APPLICATION FOR PURCHASE OF PLUMBING AND HEATING ON
The Buschmann Payment Plan

August Buschmann & Sons Inc. Indianapolis — The Morris Plan

Before a loan is made, the applicant must establish his good character and ability to make the required installment payments.

I hereby certify that all the statements on this and the reverse side of this page are true and complete and are made for the purpose of obtaining credit.

Name Mr Owner Age 37

Residence address 1036 College Ave Tel. No. Main 847

How long at above address? 3 years How long in city? 16 years Former address

Employed by Johnson Motor Co.

Business address 200 S. Meridian St Tel. No. Ran. 678

Title or position Salesman Kind of business Pumps

How long with present employer? 12 years How long in present business? 16 years

Name and title of superior officer D. P. Johnson

Fixed or average salary, wages or income, $28.85 Per week & Bonus $ Per

Any other income; from what source

Are you buying your home on a payment plan? Yes Amount paid? 2050.00

If yes, from whom? A Jones Monthly payment $16.00 Balance $1250.00

In whose name is title? Mr Owner

If you own real estate give location 1036 College Ave

Value of Real Estate $3300.00 1st Mortgage $ Held by

2nd Mortgage $ Held by

Any judgments, garnishment, or other legal proceedings against you? No

If yes, explain by letter?

Name of plumber E. M Hardin Co

References—Not Relations

(When possible give names of dealers from whom you purchase on credit; or bank where you have a checking account.)

Name Home Furniture Co

Business address Wash. & Ala. St Tel. No. Main 670

Name Pierson Piano Co

Business address N. Penn. St Tel. No. Circle 6892

Name Dawson Electric Co

Business address 312 N. Ill. St Tel. No. Circle 9718

(If more space is desired for answers, use reverse side.)

Amount of contract $400.00 Amount to be paid down $80.00 Amount per month $32.00

Give full list of present creditors—

Name	Address	Amount Due Each	What For
none			

Signature Mr Owner

(INDIVIDUAL) APPLICATION FOR CREDIT.

BALANCE SHEET AS OF ....
Date

ASSETS	AMOUNT	LIABILITIES	AMOUNT
Cash on Hand		On Open Accounts (Not Due)	
Cash in Bank		On Open Accounts (Past Due)	
On Open Accts. (Not Due)		Notes Payable for Merchandise	
On Open Accts. (Past Due)		Notes Payable to Banks	
On Notes Receivable		Notes Payable Through Brokers	
On Acceptances		Notes Payable to Others	
Due from Controlled or Allied Concerns		Acceptances Payable	
For Merchandise		Due to Controlled or Allied Concerns	
(For Advances)		Reserves (Itemize)	
Finished Product (How Valued)			
Raw Material (How Valued)			
Stock in Process (How Valued)			
Merchandise Out on Consignment (How Valued)			
Machinery and Equipment			
Furniture and Fixtures			
Real Estate (Subject to Mortgage Entered in Liabilities)		Mortgage Debt (When Due)	
Other Assets (Itemize)		Other Debts (Itemize)	
		Net worth	
Total		Total	

BANK ACCOUNTS LINES GRANTED UNDER DISCOUNT ON STATEMENT DATE

Names of at least (3) chief creditors .... (Highest credit extended) .... (Terms) .... (Amount now owing)

Trade references

Between the date of the above inventory and the present time I have had no serious losses through bad debts or otherwise (except)_____

and my condition today is fully as good as set forth by the above figures.

Sales For Year Ending_____		Depreciation Charged Off_____	
Gross Profit_____		Amount Carried to Reserve_____	
Net Profit_____		Amount Drawn Out for Personal Use_____	
Other Income (Specify)_____			
Sales Expense For Year Ending_____			

CONTINGENT LIABILITY { I have no contingent liability of any kind or nature as endorser or guarantor (except as follows):_____

My merchandise is insured for $_____ Name of company_____

Plant, building and machinery is insured for $_____ Name of company_____

Life insurance for benefit of my creditors amounts to $_____

None of my accounts or notes receivable have been assigned, pledged or discounted (except as follows):_____

Nor have any of my customers' acceptances been discounted or assigned (except)_____

Neither have any of my other assets been pledged or assigned as collateral for any of our liabilities (except as follows):

I have no assets outside of those included in my statement (except)_____

I have no interest in any other concern (except—name affiliations and location)_____

How long engaged in this same business_____

There are no judgments nor suits pending against me (except)_____

The form of obligation used in the financing of my business is my plain note (endorsed by)_____

None of these endorsers guarantee or endorse the paper of any other concern or individual (except)_____

The net worth of endorsers is_____

My { commercial paper is / acceptances are } placed through (Name broker or brokers) _____

My books { are / are not } Audited by a Certified Public Accountant_____

The date of last audit was_____ made by_____

(REVERSE SIDE OF "MEMORANDUM OF AGREEMENT.")

(To be filled in by Morris Plan Co.)

Amt. of Discount on M. P. R. T. Accept. $ 29.80

Amount of Insurance Premium $ 1.40

$

Recorders Fee 2.00

Total contract price $ 400.00

Total amount of previous payments made on contract price $ 80.00

Amount of M. P. R. T. acceptance above referred to $ Balance $ 320.00

Whereas the undersigned has this day accepted as drawee a certain Trade Acceptance attached to this agreement as evidence of and not as payment of the obligation due and owing by the undersigned as the same is evidenced by the contract and recitals on the reverse side hereof, which contract and recitals hereby constitute representations offered by the undersigned to procure the discount of said Trade Acceptance by The Morris Plan Co

Now therefore, as security for said trade acceptance, the undersigned hereby subscribes to a Morris Plan Installment Investment Certificate of said "company" in a sum equal to the amount of said trade acceptance and hereby acknowledges receipt of said certificate and promises to make all payments set out thereon, and hereby assigns same, together with all payments made thereon to said "company" as collateral to be held by it under the terms and conditions of a certain assignment and agreement appearing on the back of said certificate as fully and effectually as though the undersigned had subscribed his name to said assignment and agreement, copies of which certificate and assignment and agreement are printed in the coupon book issued to the undersigned in connection with this transaction and which certificate and assignment and agreement are agreed to be read as a part of this instrument.

IN WITNESS WHEREOF, the undersigned has hereunto set his hand and seal this day of Dec 16 19 21

Witness: L H Patterson (Witness sign here) (Seal)

Mr Owner (Signature)

THE MORRIS PLAN RETAIL TRADE ACCEPTANCE

TRADE ACCEPTANCE
Form approved by the American Acceptance Council.

Indianapolis (City of Drawer) Dec 16 (Date) 1921 No.

On Oct 10, 22 (Date of Maturity) pay to the order of ourselves

Three hundred twenty Dollars ($ 320.00)

The obligation of the acceptor hereof arises out of the purchase of the goods from the drawer. The drawee may accept this bill payable at any bank, banker or trust company in the United States which such drawee may designate.

To Mr Owner (Name of Drawee)

1036 College Ave (Street Address)

Indianapolis (City)

ACCEPTED Dec 16, 1921 DATE

Morris Plan PAYABLE AT

151 N Meridian FOR ACCOUNT OF

Indianapolis LOCATION

Mr Owner (SIGNATURE OF ACCEPTOR)

By

Mr Plumber BY (Signature of Drawer)

DRAWER AFFIX REVENUE STAMPS, 2c FOR EACH $100 OR FRACTION THEREOF

COPYRIGHTED, 1921, AUGUST BUSCHMANN & SONS, INC.

BUSCHMANN PAYMENT PLAN

MEMORANDUM OF AGREEMENT

THE MORRIS PLAN

THIS IS TO CERTIFY, That E M Hardin Co (Contractor)

has heretofore agreed to install plumbing (State character of work) for the undersigned

in premises known and designated as 1036 College Ave, (Description of building, street and number, city and state)

Indianapolis Ind. as evidenced by contract (Form of agreement)

bearing date of Dec 2nd 1921, and executed between the undersigned and said contractor.

The undersigned further certifies that he (it) is now the owner (State relationship to property) of said premises and that said contractor has fully completed to the satisfaction of the undersigned such work and that there is now due from the undersigned to said contractor the sum of $320.00 for such full completion of such work under the terms of said agreement. In consideration whereof the undersigned has this day executed a Morris Plan Retail Trade Acceptance maturing ten months from the date thereof in the sum of $320.00 to be offered for discount to The Morris Plan Co. hereinafter called "Company" for the undersigned.

It is hereby expressly provided that the title to the above described materials furnished by the plumber shall be and remain in the plumber until all sums of money called for in this proposal and required to be paid by me are fully paid the plumber, his successors and assigns, in legal tender of the United States; and that, until said sums of money are so paid, said materials shall be and by my acceptance hereof I agree that they shall be and remain personal and movable property, in whatever manner they may be annexed to realty; and that, in case of default in the payment of any of the installments above provided for, the contractor is hereby authorized to enter upon said premises and take possession of and remove said materials at any time; and that, in such event, the plumber shall have the right to retain as rental for the use of said materials any sum or sums of money that may have been paid by me; and that all expenses incurred by the contractor by litigation arising out of, and caused by failure to make the payments as herein provided for, shall be paid by me.

Mr. Owner

Mrs. Owner

As the owner of said above described real estate, which same is being purchased on Conditional Sale Contract, I hereby agree that such improvements as are enumerated above may be removed from said property under the terms and conditions relative thereto as they are set forth in the foregoing contract.

Mr Actual Owner

Pay to the Order of

Pay to the Order of

Pay to the Order of

owners immediately began to figure on the work required to meet the provisions of the new law.

The announcement of the firm's plan was made in a quarter-page advertisement in the Indianapolis newspapers on October 26. This was followed with a number of other small ads in the local papers. Then, on November 5, the Buschmann concern, with about eighty-five or ninety plumbing and heating contractors of the city, used a double page advertisement in The Indianapolis News, describing the details of the plan. Two weeks later another double page ad was carried in The Indianapolis Star, in which special attention was called to the idea of buying plumbing for Christmas gifts and paying for it on the "Buschmann Payment Plan."

The working arrangements and the details of the Buschmann Payment Plan are as follows:

When a customer calls at the storerooms of the Buschmann supply house as a result of the advertising, he is first asked to fill out an application for purchase of plumbing and heating on the Buschmann Payment Plan. By looking over this application, the firm's salesmen can determine about the grade of fixtures which should be sold to the prospect. The customer is then taken to the show rooms, where he makes his selection. Booklets, with quotations and illustrations of the material, are given to him. He then is asked the name of the plumber who will do the work, or the names of two plumbers he intends to have make estimates on the job.

"We try in all cases to sell a good grade of closet and brass goods even if cheap fixtures must be used," said Mr. Buschmann, "because we thereby insure the plumber against any possible 'come back' while the payments are being made. We also discourage the selection of more than two plumbers to estimate the work. All prices quoted by us are figured at plumbers' net cost, plus a reasonable profit, which has been agreed upon, and 10 per cent to take care of payment expenses."

Then the following letter with a quotation giving plumbers' cost is mailed to the plumbers selected:

"Mr. Plumber,
Indianapolis, Ind.
Dear Sir:

Mr. Prospect called at our store today and selected the following fixtures:

1 5-ft. F 64 tub complete . . . . $.....
1 F580 lavatory . . . .
1 D leader closet . . . .

Please see this prospect at once, figure the job in your regular way and add 10 per cent.

Hoping you will be successful in securing this contract we are,

Yours very truly,
August Buschmann & Sons, Inc."

After this letter is mailed to the plumbing contractor, the credit manager of the Buschmann concern checks up the questionnaire or application the customer fills out, and if he finds that the customer satisfies him, he sends the questionnaire to the Morris Plan Company, which finances the plan.

If the prospective customer is passed by the Morris Plan Company's credit department, the plumber is notified that the prospect is O. K. and that a payment contract can be made. If the prospect does not pass both credit departments, the plumber is advised to ask for cash in advance.

In this way every prospective customer must pass two well organized credit departments, as well as the judgment of the plumber. The Buschmann concern has found through investigation that a large percentage of work done by Indianapolis plumbers was taken with only a casual credit investigation, and some without any. The careful manner in which the customers' applications are gone over by the two credit departments enables the plumbers to take much less chances on their credit accounts.

If the customer's property is being bought on payments and the title to it is in some hands other than the customer, or if it is leased by the customer, the Buschmann concern requires a statement from the real owner granting the customer permission to install the work and agreeing to abide by the terms of the trade acceptance contract required when the work is completed.

When the work is completed, the customer pays the plumbing contractor a down payment of 20 per cent or more of the contract price and signs a trade acceptance contract for the balance. The plumber then endorses the trade acceptance and receives payment in full, less service charge, interest, recording fee and insurance premium, the total of which amounts to about 10 per cent of the amount borrowed.

The Morris Plan Company then makes out a Morris Plan investment certificate in the form of a book with a coupon for each payment. The payments may be made in ten monthly or fifty weekly payments, a coupon being stamped as each one is made. When all are paid, the trade acceptance is receipted and returned to the owner. All trade acceptances are recorded with the county recorder against the property on which work has been done. A fire insurance policy also is taken out in favor of the plumber.

All plumbers must fill out one of the required financial statements and the statement must be approved by the Buschmann concern and the Morris Plan Bank before he may take contracts on the payment plan. The entire plan has been passed on by attorneys and has been found to comply with all the laws of the state.

Mr. Buschmann says that since his concern has had the plan in operation and has been holding monthly "get-together" meetings for the plumbers, a number of Indianapolis plumbers have dressed up their shops, installed show rooms or put out salesmen and have begun to realize the benefits to be reaped through advertising.

"In August, to the best of our knowledge, not over fifteen plumbing contractors in the city were doing any newspaper advertising," said Mr. Buschmann. "Now there are over a hundred who are either co-operating with us in the newspaper advertisements or are advertising independently."

Mr. Buschmann says he believes that in order to operate the plan successfully in cities where there are a number of plumbers, all of those who are financially responsible should co-operate and work with one or more of the jobbers. Manufacturers of enamelware, closets, electric pumps or water heaters should be encouraged to help the plumbers and jobbers by a reasonable amount of co-operative advertising. The plumbers can help their own game, he says, by asking other lines, such as tile setters, decorators, electricians and heating concerns, to co-operate with them. In this way, the small home owner can completely modernize his home on the part payment plan.

The plan has demonstrated, Mr. Buschmann says, that many of the prospective customers are not interested very much in the total amount of the contract, but are guided largely by the size of the down payment and that of the weekly or monthly payments.

The newspaper advertising by the Buschmann concern and the Indianapolis plumbers is to be continued and will also be backed up by some attractive billboard publicity. Large billboards, about twelve feet high and twenty-five feet long, are to be constructed in good locations in various parts of the city. Across the top, in large letters, will be the words, Buschmann Payment Plan, and in the center will be a large picture of an up-to-date bathroom, heating plant, etc., with a few words on each side stating that modern plumbing may now be installed on easy payments. Across the bottom of the bulletin will be the names of two or more master plumbers who are in the neighborhood in which the bulletin is situated.

Watch for the Annual Number of "Domestic Engineering" which will appear on January 14th.

A Super-Sanitary Swimming Pool Installation

Notes on the Construction and Installation of a Sanitary Swimming Pool at Hammond, Ind.

By Ed. Cunningham

A SWIMMING pool plant of much more than ordinary interest to sanitary engineers is that installed in the Industrial High School, of Hammond, Indiana. Because of the fact that the school board, with a commendable sense of service, has decided to permit the public to have access to the pools, it became necessary to provide for the double use to which the plant will be put.

There are two pools, both primarily for the use of students of the school. One of the pools is for boys, and the other for girls. The design of the layout and the capacities specified were the work of the Architects A. C. Berry & Co., of Hammond; the work was installed by J. P. Croak, plumbing and heating contractor, also of Hammond.

The plant will be used during the hours of the day by the pupils, and during the evening hours by the public.

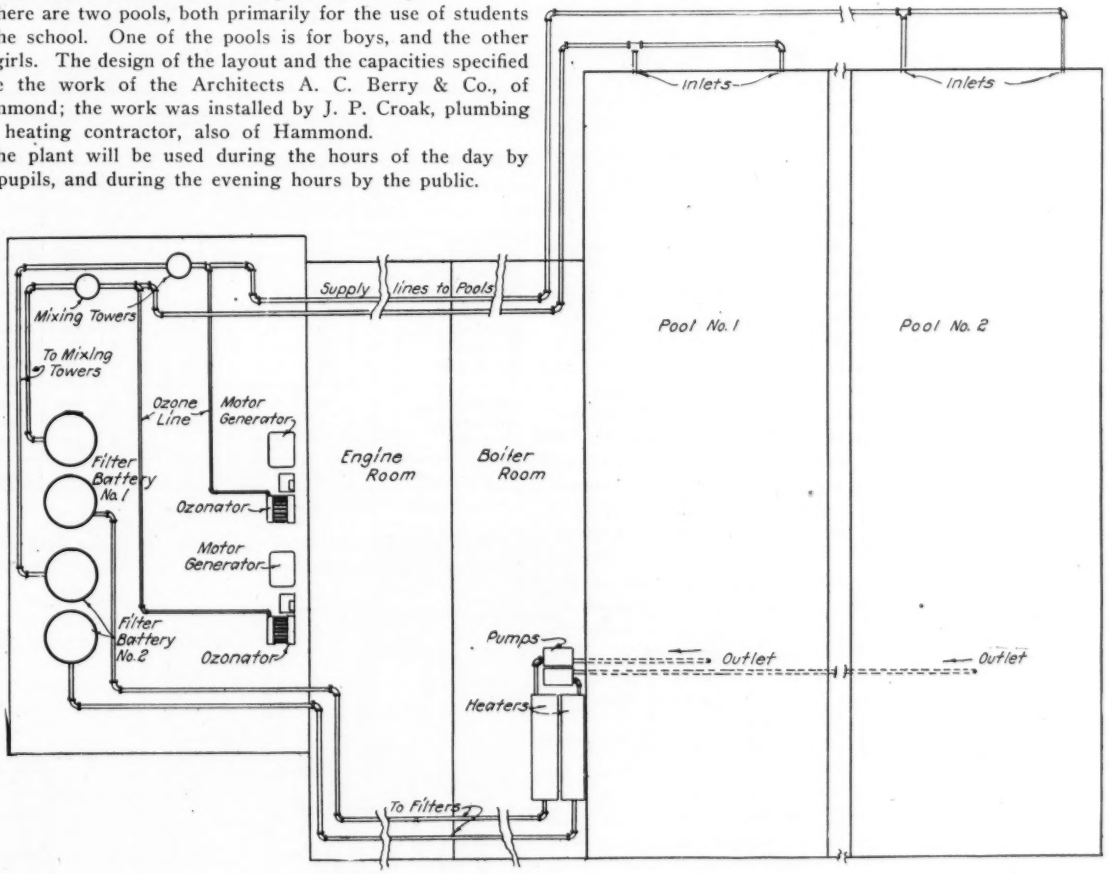


Fig. 1.

Three outstanding requirements of a properly equipped pool have been met by the combined apparatus in a most admirable and practical manner. These are: Sanitation, safety and comfort.

One can scarcely imagine a greater source of infection than the promiscuous mixing of great numbers of people in a public bathing pool; more especially when the limits of the pool are necessarily confined. A soap bath is insisted upon everywhere as a preliminary to bathing; but this is ofentimes a very superficial affair, and even if it is thoroughly done, does not remove the danger of very serious infection of diseases of the eye, skin and mucous surfaces. These are germ diseases, and might easily become locally epidemic if not very carefully guarded against. With a full sense of the responsibility placed upon them, the members of the board of education and the architect have endeavored to meet it in this installation. It is a matter of pride that it has been met fully and completely by the plumbing profession.

The three primary essentials of sanitation, safety, and

comfort, mentioned above, have been met by the use of ozonating apparatus, filters, and instantaneous pipe coil heaters. It cannot be said, however, that there is a sharp division of function on the part of each of the three kinds of apparatus; in a measure each one contributes to bringing about each of the enumerated requirements, and it may be said, too, that none of the three accomplishes all of the results.

One of the first essentials is that the water should be clear

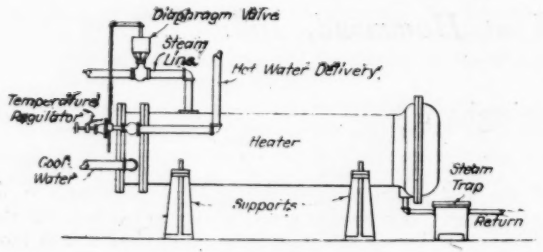


Fig. 2.

enough to permit easy vision to the bottom at all points; else an unconscious bather might not be seen on the bottom, and would drown. Besides, it detracts greatly from the pleasure of bathing to plunge into cloudy or murky water. Filters are provided therefore to meet this requirement. However, water may be apparently perfectly clear, and still be the abiding place of many kinds of the most virulent germ life in countless numbers. Fortunately, science has provided us with means not only to locate these, but also to identify and segregate them, and there are simple tests which not only determine their presence, but also give us full assurance of their absence if they do not exist in the water.

The means of destroying bacteria, and also eliminating odors, entirely, in the present plant is the introduction of ozone in sufficient quantities to accomplish the result, without at the same time introducing any unpleasant or irritating effects. Ozone in correctly proportioned amounts is highly refreshing and pleasantly stimulating, besides carrying on its function of the destruction of the bacteria of disease. It is believed that the objections sometimes offered to the use of mechanically produced ozone have been overcome in this work. Ozone is a natural constituent of the air. It is one of the manifestations—if it may be so called—of oxygen in a highly active state. It is present especially in localities where the air is very pure, and is quite noticeable after an electrical storm. The effect of the passage of an arc of electrical current of high voltage through the atmosphere, is to produce ozone in great quantities through the alteration of the proportion of oxygen to the other elements usually in combination with it in the atmosphere. This effect is very pronounced if the air is in a very dry state. This same thing may be done mechanically by reproducing Mother Nature's laboratory in miniature.

The apparatus used at Hammond is of the same type as that in use at West Point and also in the bathing pool at 23rd Street and East River, New York, both of which were made the subject of very careful investigations on the part of governmental agencies, and the results of which have been published under the direction of the United States Public Health Service; Rupert Blue, surgeon general.

Wallace A. Manheimer, Ph. D., secretary of the American Association for Promoting Hygiene and Public Baths, has written interestingly on this subject; quotations from his observations as printed in extracts from Public Health Reports (Reprint 456, March 1, 1918, Government Printing Office), from "Mind and Body," January, 1918, and the "Medical Record," Nov. 12, 1921, are made below.

"Ozone, when properly applied to the water of a swimming pool, effectively purifies the water. When one part of ozone per million parts of water is used, the result is sterile water. When half part ozone per million parts of water is used, a bacterial reduction of 99.8 per cent results, except when too great an excess of air is introduced with the ozone.

"A study of the cost of operation of the ozonator has shown that a current consumption of 2 kilowatts per day of alternating current, or 4 kilowatts per day of direct current, plus one cent a day for calcium chloride, represents the total operating cost for a 60,000 gallon pool.

"The application of ozone to the purification of swimming pools is automatic in control, reliable in action, and inexpensive in application. Accordingly, its use is recommended as a standard procedure in the sanitary control of swimming pools."

A later study by Professor Manheimer led him to the conclusion that ozone is capable of purifying even very heavily polluted pool water, and that it produces no objectionable substances in the water.

Professor Manheimer collaborated with Col. E. J. Timberlake in some tests taken at the United States Military Academy, at West Point, the tests being continued at the Research Laboratory, of the New York City Department of Health through the courtesy of the director, Dr. William H. Park.

"The summary of these tests follow:

Sample From	Total Bacteria Amount			Gas Produced in Lactose Broth				B Coli Present	Interpretation
	At 37°c*	At 24°c*	Acid Col	By 10cc	1cc	1/10 cc	1/20 cc		
Deep end of pool...	27	350	2	50%	trace	0	0	1cc	Fairly clean
Deep end of pool...	23	380	0	0	0	0	0	0cc	Clean
Deep end of pool...	3	400	0	0	0	0	0	0cc	Clean
After filtration.....	27	125	2	0	0	0	0	0cc	Clean
After filtration.....	14	135	0	10%	0	0	0	10cc	Fairly clean
After filtration.....	4	150	0	0	0	0	0	0cc	Clean
After ozone.....	17	10	0	0	0	0	0	0cc	Clean
After ozone.....	18	49	0	0	0	0	0	0cc	Clean
After ozone.....	11	60	0	0	0	0	0	0cc	Clean
Tap water control..	10	52	0	0	0	0	0	0cc	Clean

*Centigrade Temperature.

"The bacterial counts of the water from the deep end of the pool were comparatively low at all times. The counts

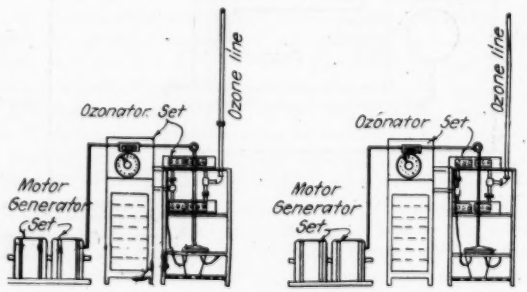


Fig. 4.

after filtration showed a noticeable and dependable reduction. The counts after ozonation were as low as average drinking water counts, and B coli were entirely eliminated."

Tabulated Results of Bacteriological Examination of the Y. W. C. A. Swimming Pool by the Department of Health, of the City of Cleveland. Tests by the City Bacteriologist:

Sample Number	Source	Date	Number of Colonies per Cubic Centimeter on 1% Lactose Agar Plates	Gas Production in 1% Lactose Bile		10cc
				1/10cc %	1cc %	
13142	Pool	4/25/21	1440	0	bub	10
43	Filter	4/25/21	75	0	0	100
44	Ozone	4/25/21	3	0	0	Anaerobic
13147	Pool	4/26/21	9280	0	0	bub
48	Filter	4/26/21	1920	0	0	10
49	Ozone	4/26/21	0	0	bub	10
13157	Pool	4/27/21	Overgrown	0	0	10
58	Filter	4/27/21	275	0	0	10
59	Ozone	4/27/21	0	0	0	0
13166	Pool	4/28/21	Innumerable	0	0	bub
67	Filter	4/28/21	1760	0	0	0
68	Ozone	4/28/21	6	0	0	0
13177	Pool	5/2/21	1190	0	0	15
78	Filter	5/2/21	235	0	0	60
79	Ozone	5/2/21	3	0	0	0
13184	Pool	5/3/21	Innumerable	0	0	bub
85	Filter	5/3/21	1860	0	0	0
86	Ozone	5/3/21	4	0	0	0
13193	Pool	5/4/21	11720	0	50	15
94	Filter	5/4/21	4960	0	bub	35
95	Ozone	5/4/21	1	0	0	0
13197	Pool	5/5/21	Innumerable	0	0	10
98	Filter	5/5/21	8900	0	0	bub
99	Ozone	5/5/21	11	0	0	0

"Ozone is a powerful oxidizing agent usually designated by the chemical symbol 'Oz.' It is a highly unstable gas, breaking down when in contact with organic matter and bacteria, liberating oxygen in the active nascent condition. Because of its oxidizing properties, it is a bleaching agent and a powerful disinfectant. It is only slightly soluble in water, where its presence is not objectionable or noticeable. When it is passed into the water it bubbles through, purifying the water, improving its appearance and leaving no trace of itself. Its action can well be compared to ordinary combustion, and thus waste matters coming into contact with this gas are effectually destroyed.

"Ozone is produced commercially by passing atmospheric oxygen through a field permeated with a silent electrical brush discharge. That the production of ozone is commercially practicable is proven by the fact that it is used in many cities of Germany, France and Russia. According to Spalding, there are 49 large ozone plants abroad having a daily capacity of over 84,000,000 gallons.

"When it is realized that ozone is a powerful oxidizing agent it can be postulated that all that is necessary to effect disinfection is to bring this oxidizing agent into intimate contact with the bacteria. Furthermore, only that amount of ozone need be used, which is sufficient to oxidize the organic matter in the water. Accordingly, if even the slightest excess of ozone be present, **the water will be sterile.** The only proviso to this is intimate contact of the ozone with the water."

The Apparatus.

There is shown in Fig. 1, a plan which indicates the location of the various devices in relation to the pools.

Circulating connections are made to change the water, the pump suctions being located on a center line of each pool, about ¼ of the distance from one end, and at the bottom of the pool; the coolest water thus is going to the pumps at all times. The heated and purified water is delivered below the surface at one end of each pool, two openings being used for each.

The water is pulled from the pools by motor-operated centrifugal pumps, these being duplicate sets—one for each pool; in fact, the entire installation is in duplicate, and entirely separated. The pump delivers the cool water to an instantaneous heater; this is composed of an external shell and a series of tubes into which the water is pumped and through which it passes back and forth and so located as to assure the heating of the water to the required degree in the brief time of passing through the heater; the heating surface consists of straight 1½-inch O. D. seamless brass tubes rolled into a fixed head at one end and a loose or "floating" head at the other; that is, the tube structure is in no way attached to the shell of the heater; this construction admits of the expansion and contraction of the tubes. Steam is supplied at low pressure and its admission is controlled by a diaphragm valve, actuated by a thermostat extending into the water. The temperature of the water is raised 30 degrees F. from 50 degrees to 80 degrees F. Each heater is 57 inches long, the greatest diameter being 22

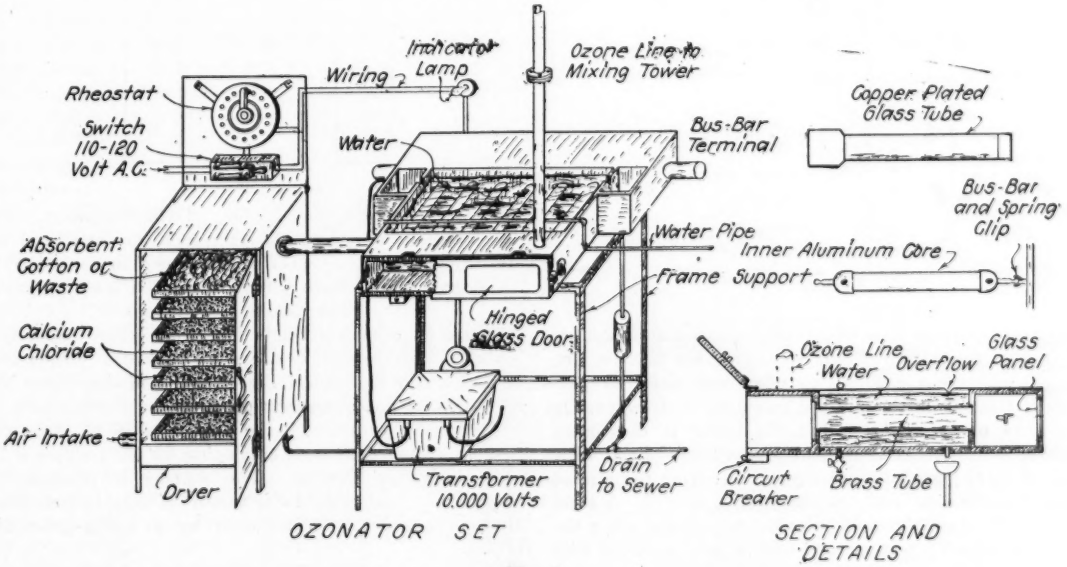


Fig. 5.

inches and the shell proper 15 inches. A detail of the heater and piping connections is shown in Fig. 2.

Water is delivered from the heater to a battery of two filters—there being two batteries, one for each pool. Each of these filters is 54 inches inside diameter and 6 ft. 6 inches high, constructed of heavy steel built to stand a working pressure of one hundred pounds. The filters are of the clear well type, constructed with a false bottom or diaphragm which is above the lower head, riveted to the cylinder and stayed with stay-bolts. The diaphragm is drilled at 6-inch centers to admit the strainers or sand valves, which hold the filtering material back, allowing the water to pass through.

These strainers are made of non-corroding hard bronze metal to withstand the cutting action of rapidly passing water; vertical cuts or slots are provided, extending from

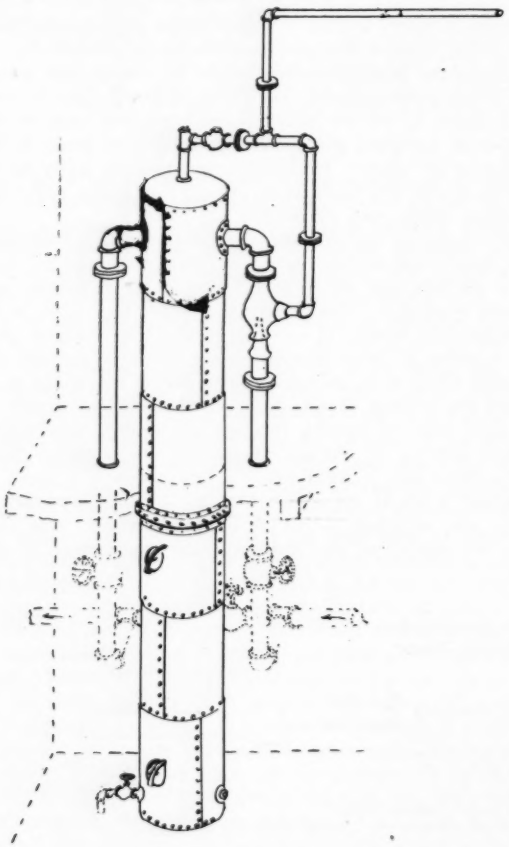


Fig. 6.

three-eighths of an inch of the center, on top and bottom, giving the strainers more than six times the area in the slots, and very great capacity to allow the water to pass through freely. The strainers are arranged to draw equally on all parts of the bed so that the water is distributed throughout the filter bed in equal proportions. Each filter is so piped as to permit the washing of one from the filtered water of the other, or from the city supply, at will. A sight glass is provided on the washout pipe to indicate when the filters are thoroughly washed, and each is also provided with a re-wash to relieve them of any dirty water that may accumulate in the bottom, in the back wash. Each is fitted with an outside cast iron chamber for holding the alumina coagulant. A back-pressure valve is located in the main supply pipe leading to the filters; the back-pressure valve is tapped on either side of the swing gate to receive a connection to and from the coagulant feed tank. The object of the back-pressure valve in the main supply pipe is to produce only sufficient back pressure to induce a shunt pressure through the coagulant chamber, and to cause the solution to flow. The back-pressure valve is provided with a movable weight, which is set on the lever to increase or diminish the back pressure. With the back-pressure valve once set to produce the necessary back pressure, no further attention to, or adjustment of, this part of the apparatus is needed, and the feeding of the coagulant solution becomes practically automatic. The pressure on the inlet side of the back-pressure valve increases or diminishes with the velocity of the water through the valve and filter; consequently, the feeding of the coagulant solution is automatically increased or diminished in direct proportion to the quantity of water being drawn from the filter. If the

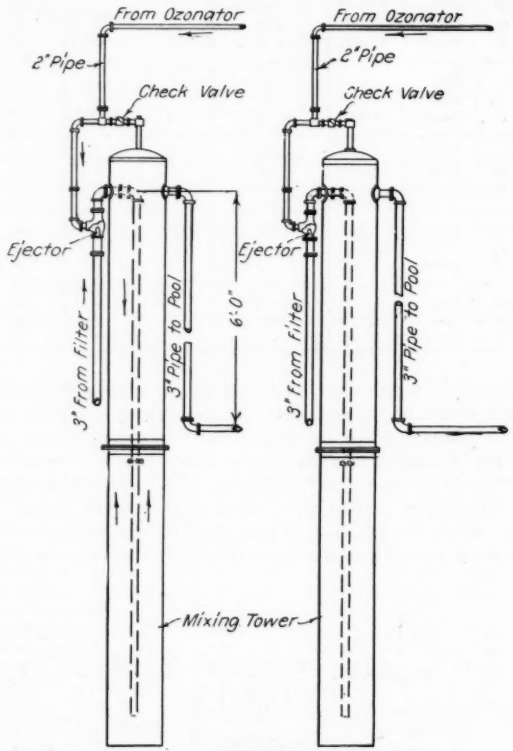


Fig. 7.

filter stops, so does the feeding of the coagulant. To fill the coagulant chamber, the valves on the inlet and outlet are closed, and the cover removed by means of a hand wheel and yoke. Each filter is provided with by-pass.

The Ozone Production.

Ozone is produced and is mixed with the water by two separate and distinct devices, the ozonator proper shown in Fig. 4, and in detail in Fig. 5; and a mixing tower shown in Figs. 6 and 7. Ozone is produced by passing very thoroughly dried air through the field of a silent high tension electrical brush discharge, employing for the purpose a 10,000 volt alternating current. The voltage is obtained by a transformer, and, where direct current only is available, the alternating current is produced by a motor-generator as in this case.

On the left of Fig. 5 is shown an enclosed cabinet; this has several pans, the lower ones being filled with calcium-chloride, and the upper with absorbent cotton, or waste. Air is introduced at the bottom, passing upward through the de-hydrating pans and over into the ozonator side on the right. A 110 or 220-volt circuit is brought to the top

(Continued on Page 634.)

KINKS *for* PLUMBERS *and* STEAM FITTERS

Simple Methods for Solving Several Puzzling Problems

Connections for Hot Water Radiators.

The supply connection for a hot water radiator should be made at the bottom opening, if the feed pipe comes from below. If an overhead job the connection should always be made at the top opening.

As the water in a new job is heated, the air which is held in suspension is released and collects at the top of the radiator. This is especially noticeable on the top floors of the building, and it becomes necessary to vent these radiators very frequently for the first month or more.

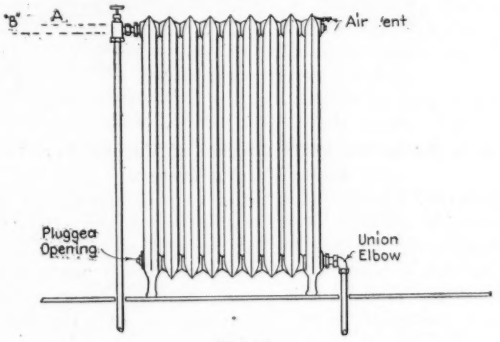


Fig. 1.

Fig. 1 illustrates a radiator connection on a basement feed gravity hot water job. The dotted line "A," represents the full height of the water and the line "B," the bottom of the nipple connections between the sections. It will be seen that if the water in the radiator falls to line "B," that circulation will stop. The job on which this caused trouble was remedied by making the supply connection at the bottom.

Thermometers on Heating Boilers.

Very frequently hot water heating jobs are perfectly satisfactory in every way, except that an extra fussy owner wants the thermometer to register up near the top of the column. Where a job, which is otherwise all right, is suffering from this complaint, it may be due to either of two causes: There may be an excessive amount of radiation in the building, and therefore the need for a high temperature at the boiler does not exist; or, which is the more likely, the thermometer is not registering correctly, due to insufficient contact.

Fig. 2 illustrates a thermometer of the ordinary hot water type, and gives a sectional view of the lower part of the construction. The part that is screwed into the shell of the boiler is merely a protecting shell for the bulb; the thermometer proper is fitted with a metal extension which fits into the upper part of the cup (shell); this metal extension is provided to obtain a snug fit and to provide means to hold the instrument in a fixed position by means of a set screw. Extending down below this is the bulb of the thermometer proper, and being filled with mercury or other sensitive element. As air in a confined space is a very poor heat conductor, some liquid material which will not evaporate or harden is placed in the cup, completely sur-

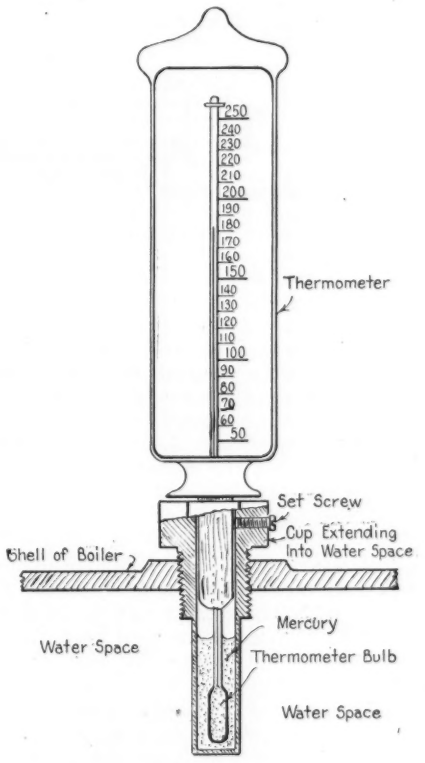


Fig. 2.

rounding the bulb. This material is usually, but not always, mercury. Due to missing packing, or carelessness, this

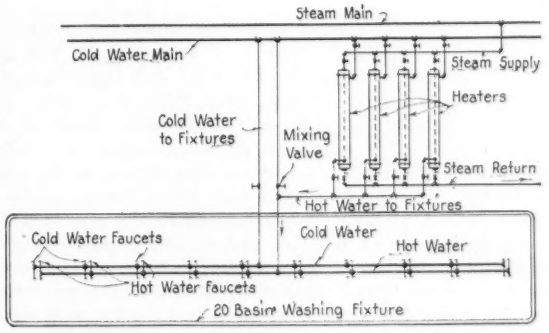


Fig. 3.

may be omitted, or lost. The remedy is obvious. Investigate, and if missing—replace.

Heating Water for Wash Rooms in Manufacturing Plants, Foundries, Etc.

A very great many manufacturing plants, especially foundries, machine shops, etc., have very inadequate facilities for the men to wash up at quitting time. No greater source of discontent exists about a plant than the necessity of washing — or attempting to wash — off grease and grime in cold water. Leaving the plant on these cold winter nights greasy, grimy and chilled is enough to dampen the enthusiasm of the most optimistic.

This should be a prolific field for the plumber. There are countless devices on the market—many of them automatically controlled, which should find a ready sale, and speed up business during the dull months.

It happens sometimes that where the plant is extensive, having several wash rooms, and at a distance from a central point where a hot water storage tank and means of heating it could be located, that the water may be supplied by separate heating units located at the point used. This method recommends itself for the reason that heat loss in transit is avoided, and also because of the further fact that steam lines and cold water lines are usually within easy distance.

Fig. 3 shows a method of heating water by means of a steam pipe extended through a larger pipe containing water. All of the steam and condensation lines, as well as the cold and hot water lines, up to the fixtures are indicated. The number of these heaters used, as well as their length, will depend, of course, on the amount of water it is desired to heat.

Fig. 4 shows a detail of one of the heaters, and the pipe connections. The heater consists of a piece of 2½-inch galvanized pipe, each end of this has a 2½-inch cap with a hole drilled through, large enough for a piece of 1½-inch pipe to pass through; this hole is not threaded. Each of the caps is faced off to a smooth surface. A piece of 1½-inch galvanized pipe, having a long running thread on each end is passed through; faced lock-nuts are screwed tightly in place against wicking or other packing; at the return end a nipple is screwed into one end of a coupling; the other end of the coupling is faced off and screwed over the end of the running thread, against the lock-nut, and with wicking between. An air vent is tapped into the 1½-inch nipple. The other end is made up in the same manner, except that a reducing elbow is used with the 1½-inch end faced off. At the bottom of the 2½-inch pipe near one end, cold water is introduced and passes into the space surrounding the steam pipe; at the other end on the top side the heated water is delivered to the circuit supplying the fixtures. The temperature may be controlled by the number of heaters turned on, also by throttling the steam valves, and further, by operating the mixing valve placed on a by-pass from the cold water main.

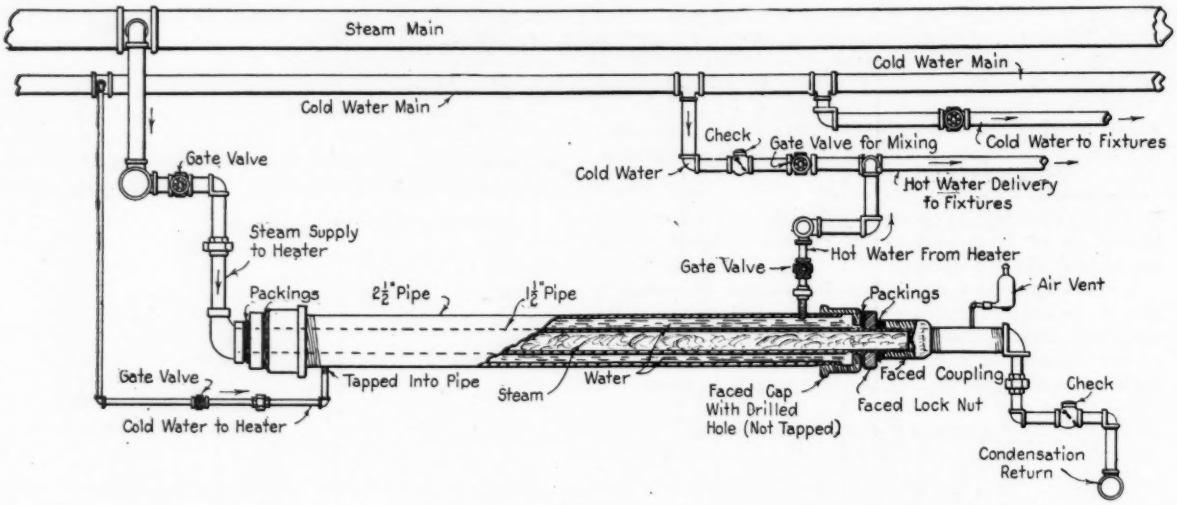


Fig. 4.

How to Secure the Right Amount of Vacuum in a Vacuum Steam Heating System.

Excessive vacuum on a vacuum steam heating job is objectionable and unnecessary, and wastes power. It increases the leakage of air into the system, and necessitates a pump larger than necessary. Where an electrically operated pump induces the vacuum, it is usually governed by an automatic switch controller, being set usually to stop the pump at about 8 inches of vacuum, and start again at 3 inches. This results in intermittent operation, the collecting of quantities of water in the returns, and the carrying of a vacuum higher than needed to properly circulate the job.

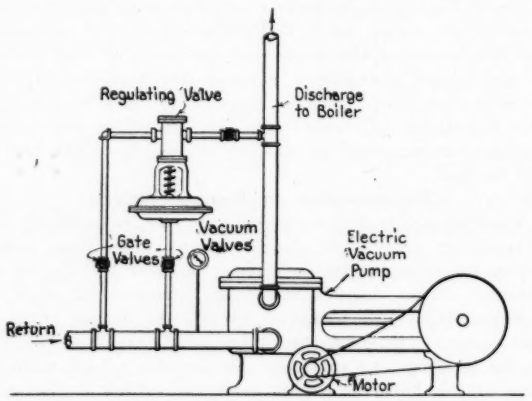


Fig. 5.

It is sometimes more feasible to size the pump more nearly to the job, so that its capacity will hold 4 or 5 inches of vacuum, and omit the automatic switch control. A variable speed motor may be used to meet the varying load conditions, being operated by hand control switch. In place of the automatic switch control operating from the amount of vacuum carried, a regulating valve may be placed as indicated in Fig. 5. This is so constructed as to remain closed until 4 or 5 inches of vacuum is reached.

SUCCESSFUL SEWAGE DISPOSAL SYSTEMS *for* FARM *and* RURAL HOMES *and* SCHOOLS

Promote Modern Plumbing, Reduce Home Drudgery, and Make Farm Life More Attractive

By Frank R. King,

Plumbing and Domestic Sanitary Engineer, Wisconsin State Board of Health, Madison, Wis.

(Continued from Page 579 in the December 24th Issue.)

Frost Protection—For Cold Climates.

Investigations and experiences of those having such systems indicate that septic tanks and absorption fields may be operated at shallow depths if certain requirements are rigidly observed. The requirements are as follows:

1. The absorption field whether shallow or deep must be constructed in ground which will absorb water. The more absorbent the soil the less danger there is of the field freezing.

2. The surface of the liquid in the septic tank must be a reasonable distance below the original ground level. The termination of the house drain above the ground line so as to provide for a head to operate a syphon and absorption field invariably results in the freezing of the liquid in the tank, dosing chamber and field tile.

3. All septic tanks, dosing chambers and disposal units and pipe lines subject to extreme frost conditions should be covered with a layer of straw at least 12 inches in thickness during the winter months.

4. The tank and absorption field must be kept in continuous use throughout the winter. If the house is left vacant for a few days or if insufficient volume of warm water is used, the system will freeze and be rendered useless until the frost goes out of the ground.

Syphon or Dosing Chamber.—If the ground is suitable for an absorption field or a series of absorption trenches or an underground or above ground sand, gravel or crushed stone filter bed, a syphon chamber should be built to discharge intermittently the effluent to be disposed of by either of the above mentioned units.

The syphon chamber should usually be constructed as an integral part of the treatment tank so as to form a second chamber.

If an absorption field is used the capacity of the syphon chamber should be such as to cause the contents to be discharged about three times in each 24 hours. Take for example a system with daily flow of 180 gallons; this would mean a contents discharging capacity of 60 gallons or 10 cu. ft., or a chamber 3 ft. long, 3 ft. wide and 17 inches deep. A syphon chamber of these dimensions will be suitable for a system constructed for 12 persons or less.

Where drain tile is used, its combined area must be equivalent to the syphon chamber's liquid contents discharging capacity.

The Action of the Syphon.

The action of the automatic syphon in discharging the treated sewage effluent is as follows:

The U trap is filled with water and as the effluent flows into the syphon chamber the air is entrapped in the bell which covers the long leg of the U. The effluent is prevented from discharging by the weight of the liquid in the short leg of the syphon. When the effluent has risen high enough in the syphon chamber the resulting head on the bell end of the syphon overcomes the pressure of the column in the short leg and part of the effluent in the latter is forced out.

This starts the flow through the syphon which continues until the effluent in the syphon chamber fails to fall to the under side of the bell when air is again admitted. The pressures are thus equalized and the flow ceases.

An overflow pipe from the syphon chamber is necessary in case the syphon should fail at any time. This overflow also acts as a vent pipe to provide air for the syphon. If this wall is carried up to the roof of the tank, vent pipes should also be left in the wall which divides the septic tank from the syphon chamber. A manhole similar to those specified for the septic tank is required in the top of the syphon chamber, and in chambers built at some depth below the surface of the ground wrought iron steps may be provided to facilitate inspection.

Basement Drainage.

There are no specific statutory provisions or rules or regulations requiring the draining of basements. This is optional with the property holder. It is believed, however, that any additional expense incurred in draining the basement is justified by the sanitary advantage obtained, and it is therefore, desirable that whenever possible the system be so installed as to provide for basement drainage.

Notes on Materials and Installation of System.

Septic tanks and pipe lines require careful construction.

The plumbing contractor, if he does not specialize in this work himself should undertake to see that it is properly done.

Piping.—Cast iron pipes should be used in place of vitrified clay inside all buildings and under walls, where installed in close proximity to shallow wells and other sources of water supply if the sewer line is laid close to the surface, and under roadways or ground that is subject to traffic or penetration by tree growth.

Glazed vitrified clay pipes should be laid true to line and to the grades as may be required. Pipes should be jointed with cement mortar in the proportion of 1 part of cement to 2 parts of clean sharp sand.

The drain extending from the building to the disposal unit may under favorable conditions be made either of vitrified clay pipe or cast iron, installed in the same manner as generally prescribed for house drains.

Inlet and Outlet.—The inlet from the building to the treat-

ment tank should be a pipe of adequate size entering the treatment tank above the water level and be provided with inverted tee as shown. The outlet from the treatment tank to dry well or filtration trench or other disposal terminal must be at least 4-inch pipe or larger pipe with inverted tee, placed in the wall of the tank as shown, with lower side of the horizontal pipe at least 2 inches lower than the bottom or lower side of the inlet pipe. If the inverts are not used, baffle boards must be provided so as to keep floating solids from entering the dry well, filtration trench, or other disposal terminal.

Method of Ventilation.—All sewage disposal systems should be ventilated in such a manner as to create a free circulation of air throughout the installation by the placing of fresh air inlets, extending not less than 10 inches above the ground, at the points shown in the sketches. No such fresh air inlet should be placed within 20 ft. of any window, door or other air intake in connection with any building used for human habitation.

Note.—Free circulation of air as above referred to means air entering through one or more fresh air inlets, passing on through the units and piping in connection therewith, thence through the inverts of the treatment tank by means of the vent openings, and the air continuing onward through the house drain, soil, waste and vent pipes to a point above the building, thus not only creating an effective circulation of air but conveying all offensive odors and gases to a point above the roof.

Manhole and Cover.—The treatment tanks, syphon chambers, dry wells, or similar units shall be provided with adequate manholes properly located and extended to the surface of the ground so as to make the interior readily accessible for examination and cleaning. All such manholes shall be equipped with an adequate concrete, stone or cast-iron cover.

If the covers are made on the ground from concrete, they should be provided with lifting rings and should be substantial and heavy enough to permit removal only by an adult person.

Forms.—The earth bank, unless caved in may be used for the outside form of the concrete work. The inside forms for the side walls should be 1-inch boards or 2-inch planks, whichever may be most convenient. These should be nailed to 2x4 studding spaced as may be required for rigid supporting.

Cement.—A standard brand of American Portland cement should be used.

Sand.—The sand to be used as a part of the gravel must be free from loam, sticks, or other organic matter. All soil found in pockets, or that overlying the gravel bed in the pit should be excluded.

Gravel and Sand.—The gravel used for making concrete should consist of sand and small stones not over one and one-half inches in diameter. The amount of sand present should be at least 40 per cent but not over 50 per cent. The gravel should be clean and free from dust and other foreign matter which would impair the strength and durability of the concrete.

Concrete.—The concrete for the tank should be composed of one part cement mixed with six parts of gravel, or, if crushed stone is used, it should be one part cement, three parts sand and five parts crushed rock. The concrete should be mixed on a substantial platform of planks or boards securely fastened together so that the various materials of the concrete can be kept entirely free from admixture of foreign matter. A sufficient quantity of water must be added to form a good paste. The amount mixed at one time should not exceed that amount which can be used up before the cement has time to set. The use of a concrete mixer is preferred. If mixed by hand on a board, concrete should be turned over three times dry and three times wet.

Re-enforcing.—The top and wall of large septic tanks, syphon chambers and dry wells should be re-enforced with iron rods, heavy fence wire, strap iron, or any similar adequate material which may be available.

It is advisable also to re-enforce concrete walls and bottoms of all water-tight treatment tanks to prevent cracking.

Finishing of Walls.—Walls and bottoms of treatment tanks should be trowelled to a perfectly smooth finish with a coating at least ½ inch thick of one part of cement to one part of sand.

General Conclusions.

The conclusions arrived at from a study of the suggested methods may be stated briefly as follows:

1. The cesspool is an obsolete and unsatisfactory method of sewage disposal. The construction of cesspools is contrary to sanitary requirements.

2. No matter what means of final disposal of the effluent are adopted, a septic tank should be built in every case for the treatment of sewage where there is no connection to a public sewer.

3. A septic tank will remove the greater part of the solids from the sewage and so lessen its offensiveness. Those solids which remain in the tank will accumulate and should be removed once or twice yearly.

4. The effluent from a septic tank is just as dangerous to health as the raw sewage discharged from the house.

5. Where the basement is not drained and the soil pipe leaves the house at a shallow depth, the septic tank should be built close to the house.

6. No septic tank effluent or liquid wastes may be discharged into a creek, river or lake, unless a special permit has been obtained from the State Board of Health or ————, as the case may be.

7. The discharge of a septic tank effluent or of liquid-carried wastes into the subsoil within the limits of any city, town or village, where public sewer is available, is generally contrary to law.

8. If where compact clay exists below the surface of the ground and the topsoil shows presence of sand or gravel, or is otherwise porous, a drain tile absorption field should be used for the disposal of the effluent.

9. If the soil is impervious clay throughout, an absorption field is useless, and unless a surface outlet is available, no system can be made to work satisfactorily.

10. Septic tanks and pipe lines may be successfully operated during winter at shallow depths if certain requirements relating to covering (noted in these suggested methods) are observed.

11. A sewage effluent disposal unit, whether surface or underground, should be removed as far as practicable from the house and from any source of domestic water supply. The water-tight treatment tank itself may be located in close proximity to the building.

12. It is impracticable to specify the minimum distance from an underground water supply at which it is safe to discharge sewage on or into the soil.

13. Treating of sewage and disposal of treated effluent from a septic tank are two distinct and separate problems which must not be confused.

14. In some areas and local spots the disposal of effluent is a serious problem. Where compact clay prevails or the soil is not sufficiently porous and no outlet exists, it is only a waste of effort and money to construct a dry well, soil absorption field, or any similar method for disposal of sewage effluent.

15. Before selecting a building site, the question of adequate drainage possibilities, if plumbing is to be installed, should receive careful consideration.

16. Low cost in initial installation usually proves high cost in maintenance plus unsatisfactory operation and service.

17. It is safe to eat vegetables grown on soil irrigated by a septic tank effluent only if they have been cooked. Vegetables which are eaten raw, such as radish and lettuce should not be grown on an area which may receive sewage effluent.

THE HEATING *of* GREENHOUSES

Suggestions With Illustrations Showing How to Plan and Install an Efficient Heating System In a Greenhouse, Answering a Question From a Subscriber In Missouri

COULD you make us a heating plan for a greenhouse which is to be heated with hot water? The piping is to run on the sides the entire length of the building. Herewith you will find a sketch of the greenhouse with its dimensions. We prefer to use a second hand, tubular steam boiler. What horsepower will it need to be?" Thus wrote a subscriber in Missouri recently.

An intelligent and detailed answer to this request would require an extended discussion of almost every phase of greenhouse heating. In a brief manner we may be able to offer

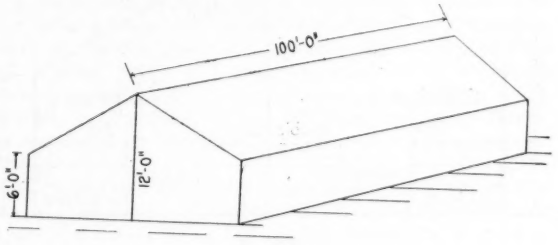


Fig. 1.

such suggestions as will help to a better understanding of the subject and, as this type of heating is not well known to the steam fitting trade we believe that a short discussion of the matter will prove both interesting and instructive to many of our readers as well as a help to our correspondent.

Fig. 1 is a copy of the sketch submitted, which shows a general plan of the greenhouse together with the dimensions of it. In notes, written on the sketch submitted, the following additional details are given: "Boiler to be at the side near the end. Doors at both ends. The ground is level and the boiler will set on the ground level." It is also noted that one side of the greenhouse is boarded up and from this statement we infer that a belt of glass runs around the opposite side, a method of construction frequently followed when greenhouses are of good height.

To install a boiler for greenhouse heating by setting it on a level with the floor of the greenhouse is a little unusual. It is more or less customary to build a potting shed at one end or adjacent to one end of the greenhouse and to excavate a cellar or pit under this shed for the accommodation of the boiler. The heat radiated from the boiler is then sufficient to keep the floor of the potting shed warm and the temperature of the shed itself fairly comfortable. When the boiler is located in this manner almost any kind of a piping system that may be desired can be installed.

To plan a heating apparatus for a greenhouse it is first required that the amount of radiation necessary shall be ascertained, and this amount is conditional upon the character of the flowers grown or the night temperature desired in coldest weather. If carnations are grown a night temperature of from 45 to 55 degrees will be required. For roses a night temperature of from 60 to 65 degrees, and for chrysanthemums 55 to 60 degrees should be provided.

The amount of radiation to maintain the required temperature is found by considering the amount of glass surface only, or its equivalent. No account whatever is taken of the cubical contents of the greenhouse. When the pitch of the roof is about one-third, a quick method of estimating is to take the ground measurement of the house (in this case 20x100 feet) and determine the sq. ft. of area. 20x100=2,000 sq. ft. To this amount is added one-third to cover the pitch of the roof and the glass at the ends. 2,000x1/3 or 1,000 sq. ft. =3,000, the equivalent sq. ft. of glass. This would be the amount estimated under ordinary conditions for a low built house. For higher houses a belt of glass usually runs along each side and the area of this surface must be added to that already determined. In this case we may assume a belt of glass about three feet wide, or about half the height of the house at the side, running along one side only, as it is stated that one side is boarded up; therefore, we must add 3x100 or 300 sq. ft. to the amount already estimated, which will bring the total glass surface to 3,300 sq. ft.

Considering a climate similar to that of Missouri; to obtain the amount of radiation required for hot water heating, we may divide the glass surface by 5 if a night temperature of about 50 degrees is required or by 4 if the night temperature must equal or exceed 60 degrees. As when estimating radiation for other types of buildings, the character of its construction enters into the calculation. Loosely or poorly constructed houses require more radiation than do the well built warmer ones. To illustrate an answer to correspondent let us assume that a night temperature of about 50 degrees is required; 3,300÷5=660, which is the sq. ft. of surface necessary to maintain this temperature. The heating surface for greenhouse work commonly used is pipe, and usually the 1¼-inch or 1½-inch size of pipe is preferred.

To supply the heating coils a 4-inch main is required and as the house is 100 ft. in length approximately 100 lineal ft. of 4-inch pipe will be used. The amount of heating surface in this pipe will be 117 sq. ft., or 1.175 sq. ft. for each lineal foot of length. Deducting this amount from the 660 sq. ft.

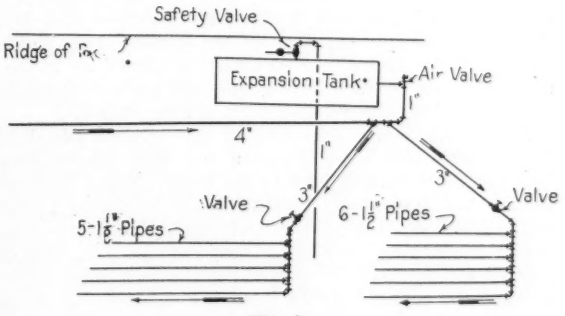


Fig. 2.

of surface required will show that 543 sq. ft. must be provided in the return pipes or coils. Assuming that the 1½-inch size will be used, and that approximately two lineal ft. of pipe will equal one sq. ft. of radiation we see that 1,086 lineal ft. of 1½-inch pipe must be installed. In making this calculation we have not considered the small amount of 3-inch pipe required for making the flow and return connections. As the house is 100 ft. in length this will require eleven runs of pipe and in dividing this we should place six

runs on the side most exposed and five runs on the warmer side, which perhaps is the side said to be boarded up.

Owing to the location of the boiler this system must be an overhead supply system. The high point may be at the boiler end of the house or at the far end as may be desired. In the former case the main will pitch downward to the far end of the house and in the latter case it will pitch upward. In either case sufficient room, or height, above the

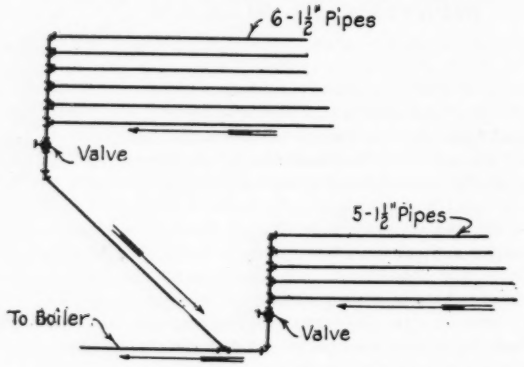


Fig. 3.

main must be provided for the installation of the expansion tank. We should prefer to have the high point of the system at the far end of the house and the illustrations given cover this detail.

The 4-inch main should be supported on the center posts which support the roof. Clamp hooks or hangers for this purpose may be obtained from any builder of greenhouses or manufacturer of fittings for greenhouse construction. At the far end of the house two 4x3-inch tees should be placed on the main with the side outlets looking down at the same angle as the pitch of the roof and two 3-inch drop pipes will supply the coils on either side of the house. The expansion tank connection is made from the end of the main, which is the high point of the piping. A 4-inch nipple screwed into the end tee and a 4x1-inch elbow, looking up, will provide a connection to the tank which will allow the system to vent freely. Fig. 2 shows a skeleton view of the end of the main together with coil and tank connections. Many greenhouse owners have found it expedient to seal the heating system by placing a low pressure safety valve on the vent and overflow to the tank. This we have indicated on the sketch and also show the vent and overflow pipe dropping down towards the floor of the house. This method provides that a limited pressure may be carried on the system which will produce a more rapid and positive circulation than is possible with an open tank gravity system.

At the boiler end of the house the coils on each side should be connected into a 3-inch return and these returns joined into one 4-inch leading back to the boiler. Fig. 3 illustrates the method suggested. Valves should be placed in each of the 3-inch flow connections and also in each of the 3-inch return connections. So far as concerns the flow, only one pair of valves would be required but it is a good method to have the piping installed in such a manner that in case of a leak, broken fitting, or other trouble, one entire side can be disconnected without interfering with the operation of the other side.

The manner of locating the beds and aisles will determine the manner of installing the coils. If, as in some houses, the beds are located on the ground the pipes may be connected as shown in Figs. 2 and 3. If beds are used it will be necessary to spread the coils somewhat, and in this event part of the pipes should run above the beds and part of them below the beds as illustrated by Fig. 4, which shows a cross sectional view of the house arranged with side and center beds. The house is 20 ft. wide and this will allow a division of the space to be made as shown. The side beds are four ft. wide, aisles three ft., and center bed (double) is six ft. wide. The 1½-inch return coils should have a downward pitch of about five inches in the length of the coils so that all air can work to the high point freely and thus thoroughly vent the system to the high point of the piping.

There is considerable more detail that might be discussed if space permitted. However, we think that with the suggestions given correspondent can adapt a system to suit such conditions as he may meet.

As to the size or h. p. of the tubular boiler that would be required for this work, this may be determined as follows: For each 100 sq. ft. of pipe coil figure 125 sq. ft. of boiler capacity to equal the additional condensing power of pipe coils over that of cast iron radiation. 660 + 25 per cent = 825 sq. ft. At least 50 per cent should be added as the regular safety allowance, therefore, 825 + 50 per cent = 1,237 sq. ft. In steam heating each h. p. of boiler is calculated to carry

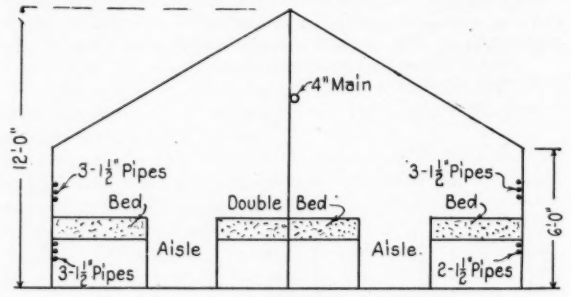


Fig. 4.

a gross rating of 100 sq. ft. and for hot water 160 sq. ft., therefore, 1,237 ÷ 160 equals almost 8 h. p. required. It should be remembered that in heating greenhouses the exposure is nearly all glass and a strong boiler is required to combat sudden changes in temperature. It is not well, or economical, to use a boiler which is too small to do the work easily under the most adverse conditions and therefore we recommend a 10 or 12 h. p. boiler for the work.

OBITUARY.

James M. Healy.

James M. Healy, who was for more than thirty years engaged in the plumbing and heating business in Indianapolis, Ind., died at his home in that city on Saturday, December 24th, following a short illness, in his 63rd year. Mr. Healy's successful business career started more than thirty years ago when he helped to organize the plumbing and heating firm of Healy & O'Brien. He retired from active association with the concern six years ago and since then has served a four-year term as superintendent of buildings and construction for the School Board. He was also active in the plumbing and heating associations of the city, having at one time been president of the Indianapolis Master Plumbers' Association and a member of the Board of Directors of the National Association of Master Steam & Hot Water Fitters, now the Heating & Piping Contractors' National Association. He was also a prominent member of the Elks and active in civic affairs. He is survived by his widow, a son and a daughter.

Foreign Trade of the United States for the ten months of this year, combining imports and exports, was greater with the countries bordering on the Gulf of Mexico and the Caribbean Sea than with all other regions, while Atlantic Europe came second, Atlantic Canada third, and the United Kingdom fourth.

THE BATH *a* DAY MOVEMENT GROWS

Working Alone We Can Do Very Little, But Working Together We Can Do Much

THE Bath a Day movement is going far. It is reaching away out and beyond the circle of plumbing and heating. And that is good. The farther it reaches the better it will be for everybody, including the public in general and plumbing and heating in particular. The spread of the movement is due to two things: the natural interest in better health and greater efficiency, and the growing co-operation of many different lines of business.

The bath and soap are closely related. For this reason soap manufacturers were among the first to see the value of a Bath a Day. Life insurance companies, the manufacturers of building materials, bankers, the makers of rugs and brushes, water and gas companies, social settlement workers, schools and colleges, preachers and doctors, health societies, chautauqua lecturers—all these, and many others, are interested in spreading the gospel of more frequent bathing.

Before nineteen twenty-two has grown very old a Bath a Day will be making a mighty stir. Because of this it will be well for the plumbing and heating industry to prepare to do its utmost.

The Bathing Idea to Ten Million People Per Month.

In checking up their 1921 advertisements, The Proctor & Gamble Co., of Ivory Soap fame, find they have emphasized the bathing idea to an average of ten million people each month. This is some publicity for bathing. Their advertisements have appeared in the leading national magazines. And such advertising will continue to appear. The Proctor & Gamble Co. are planning greater efforts for 1922. In a letter just received they say, "You know we are interested in a Bath a Day, and we want to be helpful."

The Remmers Soap Company, of Cincinnati, are not doing much magazine advertising, but they are pushing a Bath a Day in other ways. They have issued "The History of Soap" for salesmen, dealers and others who are interested. This history includes chapters on bathing and the first bath tub. They say this: "In all our future campaigns we will certainly include the slogan, 'A Bath a Day Keeps You Fit Every Way.' It is our duty to get the general public to understand the benefits of a bath a day."

James S. Kirk & Company, soap manufacturers, of Chicago, have done much, and they plan to do more. "We shall be very glad indeed to co-operate with you"—meaning with "Domestic Engineering"—"and we thank you for your support," so writes the Kirk advertising manager. During the past year they have had page advertisements, in colors, in the leading metropolitan newspapers, and in nearly all of these they have featured bathing.

The Palmolive Company, of Milwaukee, have taken an interest, and have proposed some publicity features which will be used during 1922.

Lever Brothers Company, who make Lifebuoy soap, are going to include the Bath a Day slogan in their advertising as soon as they plan a new series.

The shaving soap manufacturers are beginning to see the connection between a bath a day and a shave a day. And why not? The man who bathes more frequently is sure to shave more frequently. One naturally follows the other.

As a sample of the interest of life insurance companies, read this from The Fidelity Mutual Life Insurance Company of Philadelphia: "We are certainly with you for a bath a day."

In writing of the Bath a Day movement, the Sanitax Brush Company, Chicago, says: "You can be assured of our entire co-operation. We will plan to use the slogan wherever possible in our future advertising."

Reaching Millions of Country Folk.

The largest Chautauqua system in the world, which operates from Canada to Florida and west to the Mississippi, will, through its lecturers, talk a "bath a day" to several million people at its next summer's assemblies. The Chautauqua system will do this in the furtherance of good health and good citizenship. This is one of the very best ways for stimulating the subject of bathing in the rural communities. Furthermore, to hear a lecturer tell about bathing makes a deeper impression than to read about it.

The booklet, "The Story of the Bath," will be ready for distribution before the end of January. Judged by past experiences with booklets of a similar nature, "The Story of the Bath" will be read as supplementary reading in thousands of schools, and it will furnish themes for editorials and texts for sermons. This will greatly increase the interest in bathing, and is sure to develop many worth-while angles, which the plumbing and heating industry can take advantage of, and which should bring about large sales.

Viewed from any standpoint the Bath a Day movement should make great strides during 1922.

Co-operation Spells Success.

The late Elbert Hubbard, who was a business man as well as a writer, and who was personally acquainted with more industrial leaders than anybody of his day, once gave this recipe for success: Select a subject in which a large interest can be created; then handle that subject so well that others will want to share in the work of pushing it to the end of the limit. This gives the widest co-operation, and a wide co-operation always spells success.

A Bath a Day is a large, interesting subject. We are sure of that. And, from the first, "Domestic Engineering" has tried to handle this subject in such a way as to cause every allied interest to want to share in the work of pushing it. The growing co-operation, both within and without the plumbing and heating industry, proves that "Domestic Engineering" has worked along right lines. The next year will furnish further proof of the right kind of work rightly done.

Not only did 1921 reward its fighters, but every year rewards them. Those who fight for a Bath a Day will be rewarded in 1922, and in 1923, and in all the years that follow.

Switzerland is the only country in the world where the American dollar is below par. The dollar is quoted at 5 francs 12 centimes on the Geneva Bourse. The normal rate before the war was 5 francs 15 centimes. The highest rate after the armistice was signed was 5 francs 99 centimes.

QUESTIONS & ANSWERS

This department is a clearing house for ideas and is open to every reader of "Domestic Engineering." Problems sent in are replied to at he earliest possible moment by "Domestic Engineering," and this department can be made more valuable if readers themselves will help the man who needs assistance. Read the questions and answers. If you have had similar problems, or know from experience how the faults can be remedied, do not hesitate to send in your comment or criticism. It will be some satisfaction to you to know that you have helped a fellow craftsman and a pleasure for us to pass on the data. "Every man owes some of his time to the upbuilding of the profession to which he belongs."

BACK VENTING REQUIRED ON THIS JOB.

Editor, "Domestic Engineering":—Could the venting on this job, shown by solid lines in Fig. 1, be improved? Would it be necessary to vent laundry tray and trap of rain leader? I would like very much to have your opinion on these problems.

Illinois. A. W.

Yes, the venting can be improved. This laundry tray trap should be vented. It is not usually considered necessary to vent a rain-water leader trap situated as is this one.

The dotted lines in Fig. 1 show the venting that we consider should be added to your installation to bring it

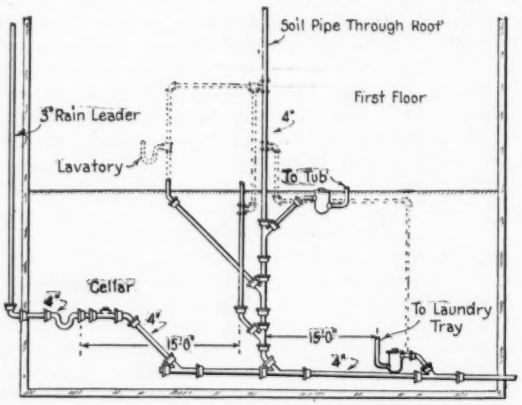


Fig. 1.

up to the accepted standard of modern sanitation. That is a standard in which there is no question about the safety and permanence of the trap seals. It is necessary to vent the laundry trap to prevent compression of this seal by sewage falling down the stack should the drain outlet to sewer or cesspool become partially blocked or air-bound from any cause. It is necessary to vent the lavatory trap to protect its seal from siphonage if the trap is a round pipe trap or an anti-siphon trap.

The vent also carries away drain air that would otherwise accumulate in the lavatory waste branch. By removing these gases the vent helps to prevent a rapid corrosion of the piping.

The bath trap does not require a special vent providing the length of the waste pipe is less than, say 3 ft. If longer, then it is wise to vent this branch just for the removal of the gases.

If the closet branch drops as low as suggested by your sketch, before entering the coil stack, it should be vented substantially as shown by dotted lines to carry off the gases and to make the closet work with less noise.

We think the total drop if unvented should be not more than 2 ft.

REMOVING LIME INCRUSTATION FROM KEROSENE WATER HEATER AND WATER FRONT.

Editor, "Domestic Engineering":—We would like to know how to take the lime deposits out of a kerosene water heater, also out of a cast iron water front for a range.

Vermont. B. W. I.

To remove the lime incrustation the following method is recommended. Disconnect the water-back and gas heater. Take them out to the back yard. Lay the water-back down flat and fill it with a strong solution of muriatic acid and water (see Fig. 1). Let it stand this way till the acid stops working. Then pour out the acid and wash out the water-back thoroughly with boiling water. If all lime has not been dissolved and washed out repeat the operation. But be sure finally to wash out all acid with hot water before replacing the water-back.

The same general scheme applies to the kerosene oil heater. Perhaps the method shown in Fig. 2 will be best for this heater. Set the heater on two sticks over a large bowl. Pour acid down through the coils using a jug and lead funnel. Dip acid from bowl and continue circulating it through the coils till they are all perfectly free from lime. Then

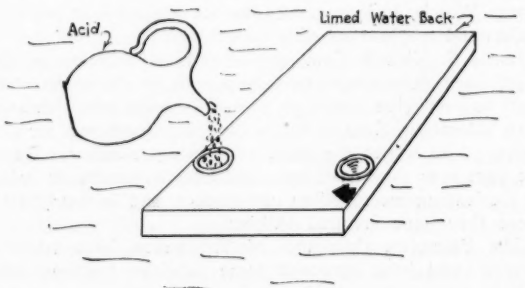


Fig. 1.

wash out coils with boiling water leaving them perfectly free from acid before connecting the heater up again. The piping, particularly the hot flow piping, may be well limed too. These should be disconnected and replaced with new piping if of galvanized iron. If of brass they may be treated

with acid and then washed out with boiling water.

Instead of letting the heaters "lime up," why don't you install a water softener of the kind you may see advertised at times in "Domestic Engineering"? They are made to

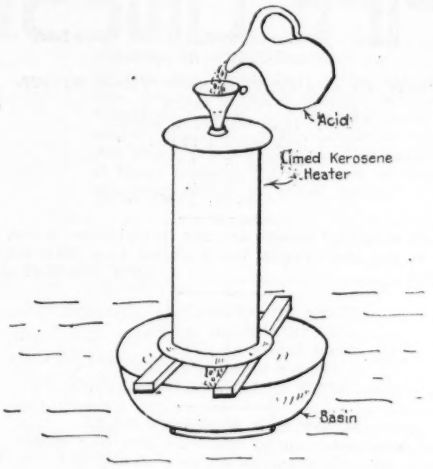


Fig. 2.

prevent the incrustation of heaters and pipes, and you know prevention is always better than cure.

A ONE-PIPE LOW PRESSURE STEAM HEATING SYSTEM THAT DOES NOT WORK RIGHT.

Editor, "Domestic Engineering":—Have recently examined a low pressure steam heating plant in a two family dwelling divided into two circuits with partly dry and partly wet returns. (See sketch.)

Upon the day of examination the weather conditions were very mild and the owner had a low even fire. One part of the circuit (towards front of building) was warm, (both main and return), and the other circuit was cold, (both main and return, towards rear of building).

All air valves on return and radiators were open (that

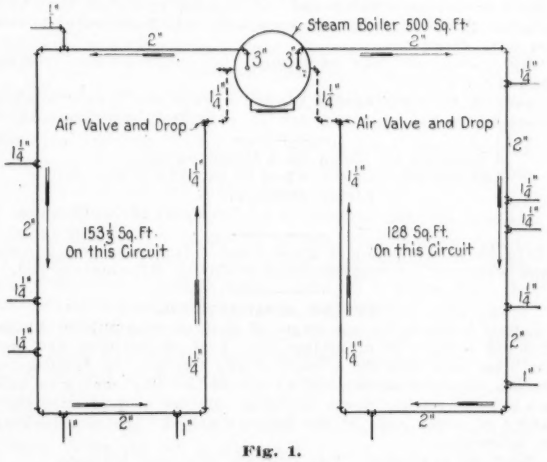


Fig. 1.

is, not clogged), to expel sufficient air from the system, I know, as I examined them all.

Having read quite a number of items in your valuable paper about piping systems and swing joints, etc., the question arises thus:

A claims the stems coming up from boiler should have been connected together with a tee. (See sketch.)

B claims the piping as installed is good practice.

What is your opinion as to the cause of this trouble, and what can be done to remedy the defect?

The owner is also desirous of heating two 30-gallon vertical boilers from a water back in steam boiler, one to be installed in cellar alongside of steam boiler and the one on second floor to remain in kitchen. (See sketch.)

Can this be done? If so, how can the piping circulation be installed?

New York. E. P. G.

The above letter is accompanied by several sketches illustrating various details of the installation of a one-pipe circuit low pressure steam job. Fig. 1 shows the most important sketch which illustrates the piping system. Two circuit mains are used and, as noted by correspondent, one of these is giving trouble. All branches are taken from the mains with 45-degree connections and the radiators are connected in the regular manner. The circuit which remains cold is that serving the smaller amount of radiation, 128 sq. ft. It is noted on one sketch that boiler and piping are covered with asbestos.

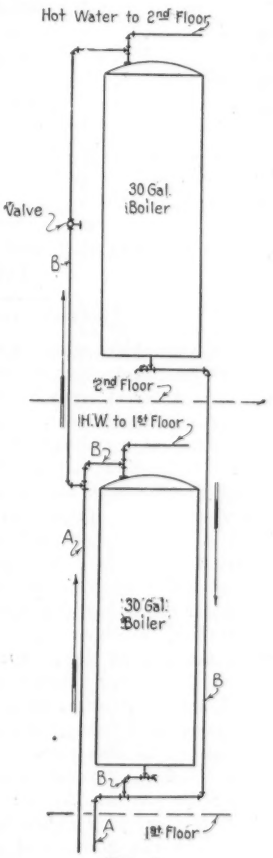


Fig. 2.

There seems to be no reason for the failure of one circuit to get hot and circulate when there is a supply of steam at the boiler. The risers are of equal size, the mains are the same size, and they should each receive an equal amount of whatever vapor or steam is generated. The first apparent reason for the failure of one circuit to work properly would be that it was air-bound. This cannot be the case if you have examined all of the air valves and found them operative. If the piping is properly vented we should look for a stoppage at some point. The stoppage may be due to a handful of waste, or other substance, that has found its way into the pipe. Some dirt, shavings, or a block of wood may possibly have entered a length of the pipe as it lay in the basement of the building during construction.

No statement is made as to whether both circuits work properly when there is a good pressure of steam at the boiler. It should be ascertained for a certainty that there is no obstruction within the dome of the boiler that might shut off the circulation to one main. The piping of this job seems to have been well planned and should work properly if a sufficient distance has been maintained between the ends of the dry returns and the water line of the boiler. If the stoppage is due to an obstruction in the piping, it will be necessary to take the main down, section by section, until the obstruction is located.

It is customary with many fitters, and is considered good practice, to connect the flow openings of a square boiler into a steam header and to connect all supply mains from this header. When a round boiler is used this method is seldom followed. This sketch shows two 3-inch uprights out of

the boiler, each supplying a 2-inch main. This is good work.

As to connecting a heating coil or water-disc in the fire pot of the boiler with two 30-gallon supply boilers, we doubt if the present boiler has the capacity to do the work properly and economically. In determining the boiler capacity required, when a coil or auxiliary heater is used, it is necessary to figure a net amount of 1½ sq. ft. for each gallon of tank capacity. Two 30-gallon boilers are to be used and this would equal 90 sq. ft. of radiation. There is 281 1-3 sq. ft. of actual radiation supplied and adding 90 sq. ft. for domestic hot water supply totals 371 1-3 sq. ft. If the usual 50 per cent allowance, as a factor of safety, is made (which is none too great), a boiler of at least 556 sq. ft. capacity will be required for the work. We should use a boiler having a rated capacity of at least 575 or 600 sq. ft.

Fig. 2 is a sketch showing how the pipe connections between the boiler and the supply tanks or boilers should be made. The sketch is intended to illustrate the character of the connections; the piping may be installed on either side of the boilers in the most convenient manner. The cross sectional area of the pipe A should equal that of the two pipes B, B. There will be a tendency for the upper boiler to receive more of the circulation than the lower boiler. If so this detail may be adjusted by placing a valve in the supply line to the upper boiler, as shown on the sketch, and by partially closing this valve the circulation can be equalized.

A SUPER-SANITARY SWIMMING POOL INSTALLATION.

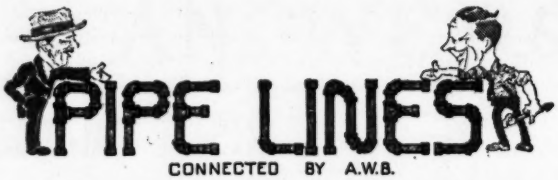
(Continued from Page 624.)

of the dryer-cabinet where a switch and rheostat are placed. The wiring passes over to the right side as shown and to the transformer, a lamp being placed so as to indicate the passage of the current. The current passes in to the transformer at a voltage of 110 or 220 and out at 10,000 volts. This high voltage is then passed up and connected to the tubes shown in detail on the right.

A view of the mixing tower is shown in Fig. 6, and a detail in Fig. 7. Each mixing tower is eighteen inches in diameter and twenty ft. high. Each tower contains 300 gallons, which allows of a full five-minute contact of ozone and water when handling 3,600 gallons per hour. Water is delivered by a 3-inch pipe from the filters and having an initial pressure at the pumps sufficient to maintain a pressure at the ejector (shown near the point of entry at the top of the tower) of at least ten pounds. The water passes into fittings and through a 3-inch pipe down to a point near the bottom of the tower; from thence it moves slowly upward and out through the 3-inch pipe to the pool, completing the circuit. At the side of the ejector fitting, the 2-inch line carrying ozone from the ozonator generator is connected; the accelerated current of water passing the ejector nozzle entrains the ozone and it passes on and downward to the bottom of the 3-inch delivery pipe, in the form of bubbles and is rubbed and brushed into the most intimate contact with every particle of water, and destroys organic matter, bacteria and odors to the point of zero.

An ordinary installation calls for the complete treatment of all the water in the pools every 24 hours. On account of the double use to which this plant will be put, the apparatus—heater—pumps—filters and ozonators—is of sufficient capacity to handle both pools in ten hours.

It is interesting to know that a very considerable saving will be effected, both in the water used in the cutting down at least 40 per cent in the cost of heating, while at the same time bringing about the highest degree of sanitation, safety and comfort.



HOW TO START THE NEW YEAR RIGHT.

Eat less—work more.
Sleep less—exercise more.
Talk less—think more.
Happiness is a habit.
Get the habit!

R. S., Flint, Mich.

They are carrying things too far in Chicago. I don't mind a strike at the stockyards; but I object to a walkout at the county jail. LEW DOCKSTADER.

"Take my advice,"
A journeyman spoke,
"And laugh at your
Master plumber's joke."

MIKE QUINN, Scranton, Pa.

WHAT IS A BUSINESS MAN?

A good business man is one who can buy goods from a Scotchman and sell them to a Jew—at a profit.

A. B., Montgomery, Ala.

HE WAS SO IGNORANT

He thought the Kentucky Derby was a hat.

T. A. R., Dayton, Ohio.

LONG LIVE THE SENATOR.

A waitress in a restaurant handed me a bill of fare and stood waiting while I read aloud from it:

"Boiled New England Dinner.
Fried Jersey Ham.
Roast Maryland Turkey.
Baked Idaho Potato.
California Asparagus."

I remarked: "Your cook seems to be a much-traveled man. Haven't you something on here from Indiana?"

"Oh, sure!" she said. "Don't you see them Beverages?"

F. S. K.

To keep up with the procession, don't dawdle.

W. H. W., Sioux City, Iowa.

VERY PARTICULAR.

He was the most down-and-out looking specimen that had called at the back door in many a day. The housewife viewed him with disgust.

"My goodness!" she exclaimed. "I don't believe you've washed for a year."

"Just about that," agreed the hobo. "You see, I only washes before I eats." P. P. L., Philadelphia.

A plumber sat down on a soldering pot,
And the pot was hot, when he thought it was not.
Rising plumber!

W. H. A., Chicago.

Life isn't in playing a good hand, but in playing a poor hand well. SOMEBODY'S STENOG, Wilmington, Del.

GETTING ACQUAINTED.

A new foreman by the name of Dodgen was put in charge of a big downtown plumbing job. Few of the men had met him. He was making a tour of the building to familiarize himself with the layout. In an out-of-the-way corner he saw two helpers sitting down smoking. Before he had an opportunity to speak, one of the helpers asked "Are you looking for something?"

"No," he answered, "I'm Dodgen, the new foreman."

"So are we. Come in and have a smoke."

FELIX, New York.

The housing shortage problem might be solved by starting all-night "movies."

FLORIDA.

Resolve to send your good jokes and stories to Pipe Lines. Do this and 1922 will be filled with all the joy I wish for you.

A. W. B.

WHAT IT COSTS *to* DO BUSINESS

EDITOR'S NOTE:—By using one of these Editorials each week in your newspaper advertising you will help to educate your community in the true facts of plumbing and heating merchandising. Such education will create good will and build your business. The more the public knows the better your service will be appreciated. Take one Editorial a week and reprint it in the upper left corner of your regular advertising space. Have it set in bold-faced type, with rule or border around it, as indicated on this page. This will cause the Editorial to stand out and make it easy to read. The use of these Editorials from week to week will not add a dollar to your advertising expense, but they will help along sales.

A Series—No. 7.

THAT MYSTERIOUS WORD.

THAT much-used business word, "Overhead," is more or less of a mystery to some people. They are not quite sure of its meaning. To be perfectly plain, "overhead" means the fixed cost—the expense that must be met every month regardless of how much or how little business a firm may do.

Take the business of plumbing and heating. There are regular running expenses, like rent, heat, light, telephone, insurance, license fees, trucks for delivery, time used in estimating and in getting to and from jobs, and various other miscellaneous "overhead."

In making a contract for plumbing or heating, it is necessary to figure a certain percentage to take care of the "overhead," as well as to figure the cost of labor and materials.

It all goes into the job, and the customer gets the benefit of every dollar spent. Were it not for "overhead," there would be a fearful lack of efficiency, which would mean poorer work and poorer service.

IF YOU care to go to your files of "Domestic Engineering," and will turn to the issue for November 26th last, and then look on page 403, you will see an article headed, "Taking the Public Into Your Confidence." This article detailed all the items classed as "Overhead." The facts and figures therein were prepared by the National Trade Extension Bureau. And these facts and figures were sent broadcast with the thought in mind that plumbing and heating contractors would use them to educate the public in what it costs to do business.

This week's Advertising Editorial is for the same purpose. But as each editorial is designed to fit a small space, there is room for only a single thought. Detailed facts or figures must be used in other ways. The present editorial, if used in connection with your local advertising, will cause the public to think. And that is enough for one editorial. If you wish to do more—to take the public still further into your confidence—use some or all of the figures used on page 403 "Domestic Engineering," November 26.

"Overhead," or what it costs to do business, is a very important subject. It is one of the first things that a man in business ought to know. And in a business like plumbing and heating, "overhead" is one of the first things a contractor ought to let the public know.

It is no more than natural for a business man to hesitate and doubt the wisdom of telling people what it costs him to carry on his line of work. He thinks such information is his own private affair. And in many cases he is right. But the plumbing and heating trade seems to be different. The public knows so little about the true facts of plumbing and heating—it has been so well fed with misinformation—that a few doses of honest-to-goodness instruction should not be out of place.

A plumber is called to do a job. He may work an hour or a day. When the bill is presented it is likely to seem high to the man who doesn't understand the facts in the case. He goes home, looks around and what does he see? Little or nothing of the work done by the plumber. He forgets, or he fails to realize that most of the work of the plumber is concealed under a floor or hidden between walls. He rarely stops to think of the cost of labor or of how much material was used, or of the overhead expense. And failing to see what he can't see, and not knowing what he doesn't know, he thinks the bill is high and proceeds to cuss and discuss the profiteering methods of the plumber.

For these reasons it seems to be good business for plumbing and heating contractors to take the public into their confidence. Every time a man is shown all that goes into a bill, he is made to understand. And when he understands, he appreciates what he is getting for his money.

A discussion of "overhead" is a step in the right direction. A man may know that journeyman plumbers are paid a dollar, or a dollar ten, or a dollar twenty-five per hour, whatever the local wage scale may be. He knows that—the rate is securely fixed in his mind. Then he gets a bill, and he sees that he has been charged a dollar and a quarter, or a dollar and a half, or a dollar and sixty-five per hour. This puzzles him. He can't understand the difference between the rate paid the journeymen and the rate he has been charged. This lack of understanding causes him to think many things which are of no benefit to the contractor.

If he is made to understand in advance that the difference between the wage of the journeymen and the amount he has been charged for labor represents "overhead" and, at the same time, is made to appreciate what "overhead" represents, he will see his bill in an entirely different light. In other words, he will know. A man who knows, rarely kicks. When he does kick, he has good reason for kicking.

The best way to educate people—to have them understand—to prevent kicks—is through publicity. To wait until a man gets a bill and asks for an explanation, is a poor time to begin education. Advance information sounds better and carries more weight. To explain after a man is disgruntled carries the flavor of an "alibi."

A person who knows anything at all, knows there are certain fixed expenses connected with every business. So, when you tell him of the expenses that are connected with plumbing and heating, you are not telling him anything he did not already know. But—and this is the point to keep in mind—he does not know that he knows of these expenses until you tell him. Then he knows he knows. And furthermore, you know he knows.

It pays to take the public into your confidence in a fair and square way—to make people see things as they are and as you see them.

Exchanging Ideas is the Foundation of Progress

What Associations Are Doing

Through United Effort the Individual Succeeds

The December Meeting of the New York Chapter of A. S. H. & V. E.

The regular monthly meeting of the New York Chapter of the American Society of Heating and Ventilating Engineers was held at the Building Trades Employers' Club, New York City, on Monday, December 19th.

This meeting was the third of the series devoted to Domestic Heating, Ventilating and Air Conditioning, the subject dealt with on this occasion being "Domestic Air Conditioning." After the customary dinner had been disposed of, the chair was taken by Charles Whiting Baker, and the two papers of the evening were read by Mr. Baker and Frank J. Douglass, of Chicago, respectively.

Mr. Baker prefaced his address by remarking that it would consist entirely of personal experiences at his own home and at other homes and buildings where he had been called in to help solve the humidification problem, which he regarded as of vital importance. In the course of a few introductory remarks on the peculiar climate of New York and district he referred to a visit he paid to England some years ago and described the British people as being fortunate in having no problem of either extreme heat or cold to provide for, whereas New York had both.

Passing on to the main subject of his address, he remarked that a house in winter must not only be properly heated but also properly humidified, and he described first how he handled the double problem at his own home in Montclair, N. J., a building of wooden construction, and told how, with coal steadily rising in price at that time, he realized that the question of economic heating was one that would pay for careful study.

Remarking incidentally that the builder should consider this problem in drawing up his plans in the first place, he described how the house was already furnished with hot-air pipes so he went ahead on that system. He put in two hot-air furnaces in one casing, and these gave satisfactory results so far as the heating was concerned, but there remained the problem of humidity about which he had been invited to address the Society.

He was surprised to find that at that time—it was twenty years ago—there was nothing suitable on the market. There was however a vacant section in the heater over the furnace door and he installed two evaporating pans. These were refilled night and morning but the objection was they did not appear to give sufficient evaporating surface for proper humidification. This he presently obtained by placing a series of evaporating pans one below the other with water flowing into the top one and thence to those below, thus giving him an evaporating surface of something like 50 sq. ft. of water. Prior to this he had attempted to solve the humidification problem of a conservatory attached to the house by constantly refilling his pans as fast as the water evaporated but he found that he was filling the pan or pans a dozen times every day. After he adopted the terrace plan of evaporating pans, one below the other, he found that this system had a remarkable effect on the hot air about the house.

One point insisted upon by Mr. Baker was that all installations either heating or humidifying, must be what he called "not only fool-proof but also damfool-proof." He condemned the average householder for being content to solve his humidifying problem with a pan carrying about a pint of water, placed on top of the radiator, and declared that it was really a question of evaporating surface and that the 50 sq. ft. he had obtained in the manner previously described was not by any means too much. He considered that a pint of water would have practically no effect on the dryness of a house in the winter, and insisted on the fact that the human body is not designed to keep healthy on very dry air. A reasonable degree of humidity must be obtained in one way or another.

In his own case, apart from the general question of health involved, one of the factors that led him to take such a keen interest in humidification was that he had a quantity of valuable old furniture which he realized would be ruined if he did not solve the problem of keeping the rooms in which it was kept reasonably warm and reasonably humidified. Any slight extra expense, to which he was put, was more than made up in furniture repair bills saved.

Frank K. Douglass, of Thomas J. Douglass & Co., of Chicago, was then introduced by Mr. Baker to handle the subject of humidification from other angles.

Mr. Douglass described how his interest in humidification problems began something like fifteen or sixteen years ago when a man newly arrived from Europe complained to him that his furniture was going to pieces under the stress of the American climate. He tried to devise something for this client but for a long time without success.

Some time later he was discussing the humidification problem with a number of professional friends, and presently called on a Russian engineer to speak. The latter remarked that in his country the definition of an engineer was a man who knew something of his own knowledge and not one who merely collected authorities, and that remark set the speaker thinking for himself.

Mr. Douglass thought that what had made and was going to make this country so great and powerful was that the young men of today are dissatisfied with the conditions of life under which their fathers and grandfathers lived contentedly. That, he thought, was the difference between America, and, for instance, China.

Returning to the subject of humidification, Mr. Douglass described how he began to experiment along this line. He experimented here, there and everywhere and his efforts were spurred on by the fact that he developed a sore throat which finally caused his doctor to order him to another climate where the air was not so dry indoors in the winter.

He experimented with pans of every kind and size and shape. He tried to extend the evaporating surface. He heated the water in the pan. Finally he heard of a device attached to a radiator that emitted the steam and this seemed to help in the main problem of heated air, which must maintain its capacity for moisture. Air has a great

capacity for moisture and will absorb it from any and every possible source including the human body.

A heating plant which it without adequate provision for humidification is nothing else but a gigantic drier, for it dries up everything (and every body) in sight. Humidity or the lack of it affects the health of persons and it also affects their ability to work. Humidity also affects furniture, books, flowers, and the extent to which these things deteriorate in an unduly dry apartment shows how the bodily health of the people living in the same apartment must be affected.

Mr. Douglass was emphatic in saying that the average American house was over-heated in the winter, being kept in many cases at 70 or 75 degrees, with little or no provision for humidity. He suggested that a temperature of 60 or 65 degrees was far better for health and also more economical as regarded the coal bill. Some people maintained that 50 or 60 degrees was sufficient but he thought it as foolish to go to one extreme as the other.

With this temperature of 60 or 65 degrees he urged that an adequate provision should be made for humidification. He had been in many houses where the only provision was a small pan on the radiator and in many cases the water was foul with standing or else there was no water left in the pan. In only two cases did he find a real appreciation of the importance of humidification.

As there were no ladies present, Mr. Douglass met with no opposition when he pointed out how, all winter long, women were flocking to the beauty parlors to have their skins treated and restored from the ravages of steam heat without any alleviating humidification. It was their duty as heating engineers to educate these women (and in some cases their husbands were quite as bad) away from the useless affectation of an empty pan on the radiator.

He did not limit the effect of the present prevailing ignorance on this subject to the spoiling of women's skins. To the same unnatural state of affairs he ascribed, to a certain extent, the alarming number of backward and defective children who, in this respect, didn't get the fair start in life to which they might be considered as entitled.

The first point to aim at was to avoid excessive heat in the home and this would not merely promote an improvement in health and virility but would effect a considerable saving in coal cost. Assuming that the temperature were reduced 10 degrees, from 75 to 65, that represents a saving in coal consumption of about 13 per cent, which in these days of high coal prices would be worth having. And if adequate provision were also made for humidification, there would be a parallel in doctors and so-called beauty specialists bills and an all-round improvement in health.

Master Plumbers' Associations in New York City Elect Officers.

The various associations of Master Plumbers in and about New York City have just held their elections of new officers for the year 1922.

David Deigan of the Manhattan Association retires in favor of William Thompson. Mr. Deigan's term of office has been very successful, his genial way, and maybe a little bit of Irish persuasiveness he has, having smoothed over many difficulties at the monthly meetings.

Mr. Thompson will no doubt be equally successful. He has been in the business for no less than 43 years, principally in Pittsburgh and New York, the last thirty years of his life having been spent in New York. It is interesting to note that he considers that the plumbing business in recent years has made great progress in the way of efficiency and more scientific methods.

The officers of the Manhattan Association for the year 1922 will be: President, William Thompson; vice-president, William Lawrence; treasurer, Thomas Cummings; financial secretary, Richard Treadler; recording secretary, Edwin Weber, chairman of the Board of Trustees, Josiah Lindsay. The installation of the new officers will take place at the next meeting, on January 3rd, and will be accompanied by the usual dinner and festivities.

The Bronx Association, while replacing Charles Kirchoff in the presidency by Fred. Smallstitch, paid the former the compliment of electing him as vice-president, a well-deserved compliment. Other officers elected for 1922 are: Secretary, Alfred Beyrodt; sergeant-at-arms, William Barken; marshall, Fred. Deivers.

William Thompson, President-Elect. **David Deigan, Retiring President.**

Both of the Manhattan Master Plumbers' Association.

The Brooklyn Association also held its annual election of officers, the new president being William Walsh; vice-president, Charles Mentzinger; financial secretary, Thomas W. Edgerton; recording secretary, W. R. Maracchia; and treasurer, John J. Dixon; the last three officers having been re-elected.

The Greater New York Association holds its annual meeting in February, after the new delegates from the various borough associations have taken office.

The Annual Meeting of Pittsburgh Master Plumbers' Association.

The confidence which the plumbers of Pittsburgh have in their president, S. A. Patton, of the McFadden Craig Company, and in his policy during the present plumbers strike, is shown by the fact that he was unanimously re-elected for the fourth time as the President of the Pittsburgh, (Pa.) Master Plumbers' Association, despite his efforts to decline.

The election of officers was held Tuesday evening, December 20th, and while there was only about one-third of the total membership present, the following officers were elected unanimously.

John Paul, who is now in charge of the plumbing department of the Pittsburgh School Board, was re-elected first vice-president.

John P. Moss, of Moss & Blakely, was elected as second vice-president.

John H. Keane was re-elected secretary-treasurer.

Max Snively was re-elected member-at-large for a term of three years.

The president announced that he would pick his new committees within the next few weeks, and also announced that the present Conference Committee would remain intact as he believed that the present committee was the best the Association had ever had.

Jos. A. Weldon was also re-appointed as chairman of the Strike Committee, whose duties are to aid the Conference Committee in ways and means of conducting the affairs of the Association during the strike.

HIGH GRADE NIPPLES
FRETZ
FROM BRAND NEW PIPE

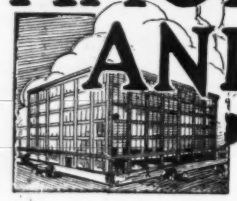
The Keystone that Insures Stability—

FRETZ Nipples are the keystones of many a successful job that would have been spoiled by using nipples made from questionable materials. The fact that FRETZ Nipples are made from new pipe with every care taken as to clean cut threads and accuracy of size, insures satisfaction on every job where they are used.

FRETZ Nipples are made in sizes from ⅛-in. to 12-in. inclusive. And, they are cheaper than the other kind.

S. S. FRETZ, JR., & CO., ***Philadelphia, Pa.***

AMONG THE WHOLESALERS AND MANUFACTURERS



COMPANIES RECENTLY INCORPORATED.

The Corcoran Supply Co., of Fall River, Mass., has been incorporated with a capital of $60,000 to deal in plumbing and heating supplies. The incorporators are: James T. Corcoran, president and general manager; Joseph F. Corcoran, treasurer, and Raymond C. Sullivan, all of Brockton, Mass.

The Coy Valve Co., recently organized in Chehalis, Wash., with a capital stock of $1,000,000 to manufacture valves and other steam specialties, is now negotiating for a site for a factory building, to cost approximately $150,000. George Graham is at the head of the company.

MOVING INTO NEW QUARTERS.

The Baldwin Supply Co., Charleston, W. Va., is moving its offices in that city to the Lewis, Hubbard & Co. Building at 901 Virginia Street. The company will maintain a modern showroom in conjunction with the supply house and sales office.

MOVES ITS OFFICES IN NEW YORK CITY.

The Ruby Boiler & Radiator Co., New York City, is moving its offices in that city from 220 West Forty-second Street to 431 West Forty-second Street. The new location will have spacious showrooms for displaying the company's products, and will be modern in every respect.

J. T. ROBERTS & BRO. SUCCEED KRAUSS & ROBERTS.

The plumbing and heating supply firm of Krauss & Roberts, Baltimore, Md., has been dissolved and the business will hereafter be conducted by J. T. and H. V. Roberts under the firm name of J. T. Roberts & Bro. John T. Roberts has been a member of the firm since its establishment, and H. V. Roberts has been associated with the firm for fourteen years. The business will be conducted at 329 North Gay Street.

NEW WAREHOUSE IN CINCINNATI.

The United States Radiator Corporation, of Detroit, Mich., will soon open a storage warehouse in Cincinnati, O. The company has leased a building, being erected in that city by the Ferro Construction Co., at McLean Avenue and Exeter Street, and will occupy it as soon as construction work has been completed. The structure will be two stories, 100x114 ft., with direct railroad switching facilities.

CANADIAN CONCERN TO MANUFACTURE VALVES.

The Alliance Brass Co., Ltd., Peterborough, Ont., recently organized in that city, has rented a building on Hunter Street, East, and is installing machinery and other facilities for the manufacture of valves and other brass goods. The company is incorporated with a capital of $75,000.

PORTION OF PLANT DESTROYED BY FIRE TO BE REBUILT.

The Haynes-Langenberg Mfg. Co., St. Louis, Mo., has awarded the contract to reconstruct the portion of its plant recently destroyed by fire. The new structure will cost approximately $125,000.

WRENCH COMPANY REORGANIZED.

The Walden-Worcester Wrench Co., of Worcester, Mass., has been reorganized with a capital of $300,000 first preferred stock, and $250,000 second preferred and 2,500 shares of common stock and creditors will receive part of their claims in cash and the balance in stock of the new company. The officers are: President, J. Vernon Critchley; vice-president and general manager, Warren S. Bellows.

DECLARE QUARTERLY DIVIDENDS.

Manning, Maxwell & Moore, Inc., New York City, have declared a quarterly dividend of 1½ per cent payable January 3 to stock of record December 31.

The Casey-Hedges Co., Chattanooga, Tenn., has declared a quarterly dividend of 2½ per cent on its common stock, payable February 15 to stock of record February 1, and 1½ per cent on its preferred stock payable January 1 to stock of record December 26.

CELEBRATE WITH ANNUAL BANQUET.

The Pacific Sanitary Manufacturing Co., of San Francisco and Richmond, Calif., closed the business year with its annual banquet in the Aztec Room at the States Restaurant in San Francisco on December 27th. All of the executive staff, sales and promotion staff and the foremen were present. An interesting program was carried out, and an enjoyable time was the net result.

NEW CONSTRUCTION WORK.

The following are among the most important contracts recently awarded as reported by the "American Contractor":

$1,500,000 apartment hotel, Cleveland, O.; L. W. Kelly Co.

$800,000 apartment building, Milwaukee, Wis.; Harley Investment Co.

$650,000 apartment building, Indianapolis, Ind.; owner's name withheld.

$5,000,000 crypt, Brookland, D. C.; Catholic University.

$2,000,000 school, Omaha, Nebr.; Frederick W. and Edwin B. Clark.

$750,000 hospital, Dayton, Ohio; National Military Home for Disabled Volunteer Soldiers.

$300,000 school, Harrisburg, Ill.; Board of Education.

$250,000 apartment building, theater, offices, Omaha, Nebr.; Ames Realty Company.

$250,000 stores, offices and hall, Washington, D. C.; Owner's name withheld.

$150,000 school, Palmyra, N. J.; Board of Education.

$500,000 school, Cleveland, O.; Board of Education.
$300,000 hospital, Crisfield, Md.; Edw. McCready Memorial Hospital.
$273,600 school, Detroit, Mich.; Board of Education.
$250,000 apartment building, Chicago, Ill.; Abe Smith.
$250,000 hospital, Clinton, Ind.; H. M. Fergeson.
$200,000 hospital, Evansville, Ind.; St. Mary's Hospital.
$200,000 plant, Wichita, Kans.; Wichita Ice & Storage Co.
$200,000 apartment building, Chicago, Ill.; Ford J. Mallman.

PERSONAL MENTION.

E. A. Uehling, president of the Uehling Instrument Co., Passaic, N. J., was one of the ten men, composing the class of 1877 of the Stevens Institute, who attended the 50th anniversary celebration of that institution held at the Hotel Astor, New York City, Thursday evening, December 15. The presence of the entire class of that year made the affair a notable one.

Paul Harold Berggreen, who has been in this country for some time as foreign representative of the Reck Heating Co., Copenhagen, Denmark, has severed his connection with that company and with H. I. McConnell has entered the industrial engineering field under the firm name of Berggreen & McConnell. Offices will be maintained at 604 Oliver Building, Pittsburgh, Pa.

John Murphy, manager of the New York office of the Sloan Valve Co., Chicago, enjoyed the holidays in Chicago. He reported business satisfactory in New York, but expected a healthy increase after the building situation had been cleared up.

Chas. P. Hackett, manager of the Philadelphia branch of the United States Radiator Corporation, Detroit, Mich., suffered a broken leg and ankle about two weeks ago while attending a football game.

TRADE LITERATURE

Catalog R of the Trenton Potteries Company.

The Trenton Potteries Company, Trenton, N. J., has just issued its catalog R which contains 321 pages of descriptions and illustrations of the company's products. The catalog measures 8x4½ inches, bound in blue board covering with printing embossed in gold. Twenty of the front pages are devoted to index, codes and suggestions for writing plumbing specifications, while the remainder of the catalog is given over to illustrations and descriptions of more than five hundred fixtures.

Sanitary Locker Booklet.

The Hess Warming & Ventilating Co., Chicago, has just issued a neatly prepared booklet descriptive of its sanitary medicine cabinet locker and lavatory mirrors. The booklet contains twenty pages with many illustrations of these fixtures. The cover is embossed in green and white, giving it the appearance of a wall in a tiled-in bathroom.

Green & Lidster, Ltd., Win Chicago Pump Company Name Contest.

The result of the contest held by The Chicago Pump Company, of Chicago, to determine a name for its condensation pump and receiver outfit, has been announced. The name settled upon was "Sure Return," submitted by the firm of Green & Lidster, Ltd., 237 Fort St., Winnipeg, Canada. It will be used by the manufacturers in the future to designate this unit.

President M. I. Weil, of the company, after expressing his appreciation of the interest shown in the contest, stated that final decision was reached only with difficulty, as there were so many good names suggested.

Twenty Years Ago in "Domestic Engineering"

Saturday, December 28, 1901.

Extensive Improvements.—Additions and improvements have been made at the Ahrens & Ott works of the Standard Sanitary Manufacturing Company. The additions and improvements were made necessary by the recent fire which destroyed a part of the company's large plant at Louisville, Ky.

Profit Sharing Successful.—The N. O. Nelson Manufacturing Company, St. Louis, states that its profit sharing plan has worked successfully for the past fifteen years. The plan is described as a limited co-partnership between capital, management and labor.

Water Works System.—Flint, Michigan, will submit a proposition to the voters to build a water system to cost $225,000.

New Ordinance.—The city council of Dayton, Ohio, has passed a plumbing ordinance designed to make it hard for an inexperienced plumber to do business. All plumbers must pass an examination in order to secure a license, and then must furnish a bond of $500 and pay a fee of fifty cents for each permit taken out.

Co-operative Shop.—The journeyman plumbers of Denver, Colorado, who have been on a strike for several weeks, have started a co-operative shop in competition with their former employers. By fixing the price of work at a low figure, they hope to compel the masters to come to terms or lose business.

Journeymen Incorporate.—The United Brotherhood of Journeyman Plumbers, the principal office of which will be in Denver, has been incorporated. The obect is closer co-operation among the members of the craft.

Disbanded.—The local association of journeymen plumbers at Pittsfield, Mass., has been disbanded, and in its place a new organization has been formed, to be known as the United Association of Plumbers, Steam Fitters and Gas Fitters and Steam Fitters' Helpers.

Harvest for Plumbers.—The recent and unexpected cold snap in the West has resulted in an enormous business for all plumbers. It's a cold wind that doesn't blow somebody some good.

Making Wrought Iron Pipe.—The Carnegie Tube Company, of Carnegie, Pa., have their pipe mills running and will be ready to fill orders January 1.

Defeated Again.—The mighty John Simmons bowling team has again met with defeat. Last week the Ronalds & Johnson team did the trick; this time it is the Crane Company team.

Another Strike.—The union plumbers of Beaumont, Texas, are striking for an increase in wages from $4.00 to $4.50 per day. They have the eight-hour day in Beaumont.

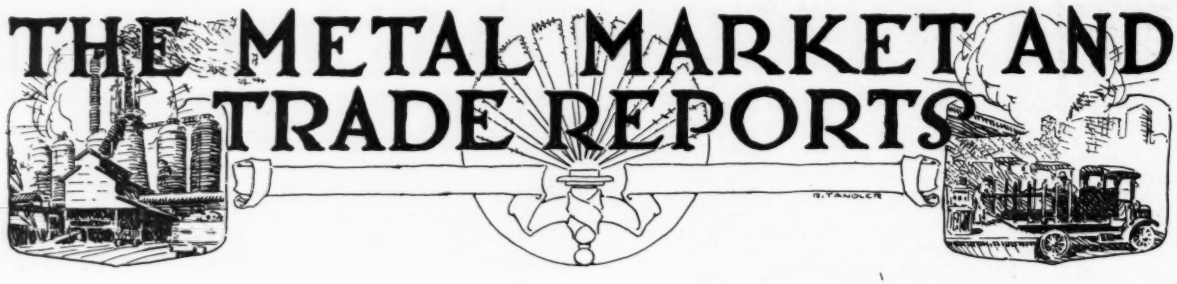
Never So Busy.—The plumbing firms of Tampa, Florida, say they are months behind with work, owing to the fact that they cannot hire enough plumbers.

Plans Completed.—The drawings and specifications for the immense sanitary system required for the St. Louis World's Fair have been completed. Contracts for twenty miles of sewerage will be let at once.

Big Contract.—Fred Butler, of Greenville, Miss., has secured the contract for the steam heating outfit for the new state capitol building at Jackson.

Many Improvements.—The Ireland & Mathews Company, of Detroit, will add improvements to their plant which will cost about $35,000. This company has been in existence only twelve years and now employs 500 men.

THE METAL MARKET AND TRADE REPORTS



Steel and Iron.

The steel market is, as usual for this time of the year, dull. The holiday season and the approach of inventory time suffice to lower the rate of mill operations—at the smaller mills considerably, at the larger but slightly. Taking it as a whole, the maximum operations of the United States Steel Corporation did not occur in October, but rather in the second week of November, and last week the corporation did even better. Independents, as a whole, are averaging a considerably lower rate, largely on account of so many mills being practically idle.

No particular change in demand for tubular goods has occurred by reason of the declines in prices last week, when the National Tube Company issued new lists reducing O. D. pipe, oil country goods and standard pipe about $5, and line pipe $6 a ton. Buyers preparing for inventory are buying sparingly. There has, nevertheless, been a fair running demand, but the market will hardly broaden before the middle or latter part of January.

Standard pipe is destined for a moderate movement in keeping with such business activity as is now occurring. Demand for oil country goods hinges to a great extent on the future of oil prices. The oil industry has been at considerable expense the past year for storage, and is unlikely to increase its facilities. Now that the new Mexican field is well lined up, an investigation has shown the field to have taken altogether about 120,000 tons of steel, in casting and other oil well supplies, in line pipe and storage tanks, etc.

Demand for tin plate for current requirements is practically normal for this season of the year, being equal to the engagement of slightly less than half capacity. Mills are not particularly interested in requirements for the fore part of the year to come, against which the mills would like to have orders at this time. The independent manufacturers are operating on current requirements; the leading interest has, in addition to regular business, some operation against tin plate to be invoiced after January 1. The latter is operating at an average of 80 per cent of capacity, with the independents at an average of between 45 and 50 per cent, making an average of about 67 per cent as a whole. The market on tin plate generally is quotable at $4.75; there is some shading, say to $4.65, but apparently by mills that need to buy their way into the market.

Structural shapes show practically no activity, and may be quoted nominally at 1.60 cents in ordinary lots down to single carloads. On large lots 1.50 cents is not an improbable price. Plates remain quotable at 1.50 cents to 1.60 cents the higher figure applying only to undesirable orders. The range of the bar market seems to be 1.50 cents to 1.60 cents. When the market broadens competition will lower prices somewhat, say by $2 to $3 a ton. Prices are below cost of production now, with the present rate of operation. With lower freight rates and a heavier operation the cost would be reduced.

The outstanding feature of the sheet market continues to be the absolute firmness of prices. It is impossible to shade the prices of 3 cents for black sheets and 4 cents for galvanized. Twice in the last four months sheets have broken from 3 cents and 4 cents first in August and again in October, and in each case the total divergence was $5 a ton or more. This is now the third time the mills have endeavored to make a stand on 3 cents and 4 cents, and the trade is awaiting the result. Demand for sheets is widespread—a little demand from practically all classes of buyers, in small quantities. The automobile trade, buying little at present, is likely to figure in the market in a fair way in the next few months. Sheet production is between 55 and 60 per cent of full capacity, the leading interest operating at substantially above 60 per cent, with the independents a few points below.

New business in pig iron was scarce last week. Consumers, even those who have been operating in a hand-to-mouth way, have evidently covered their requirements for the balance of the year and there is everywhere a distinct disinclination to add to this year's obligations. The large manufacturers of heating apparatus, who have been buying with some liberality, are no longer in evidence. The furnaces, however, have been fairly well provided with orders to carry them over the turn of the year.

The production of coke has been increased by both the furnace and merchant ovens, with prices as quoted last week. Prices for pig iron are quoted as follows:

No. 2 Pittsburgh	$21.46@21.96
No. 2X Philadelphia	21.34@21.76
No. 2 Southern, Birmingham	17.50@18.00
No. 2 Chicago	19.50@20.00
Bessemer, Pittsburgh	21.96@22.46

Copper.

Copper, in keeping with the general tone of all the metals, was flat and uninteresting. There had been a good export demand early in the week, sufficient to sustain the market though the domestic consumers were absent, but towards the end of the week this demand fell off and prices were nominally unchanged. The week closed on the eve of the holidays with a genuine feeling of confidence and satisfaction on the part of the producer, as the year will open with surplus stocks very much reduced and with prospect for a steady increase in consumption. In the meantime, while demand may be light, there is very little selling pressure and producers claim to be able to hold the price for a more active market. Copper was reported dull by the Metal Exchange and electrolytic was quoted at 13.625 cents refinery for spot and December, against 13.375 cents bid, 14 cents asked, and January and February at 13.75 cents against 13.50 cents bid, 14.125 cents asked.

Tin.

Nothing better than perfunctory interest was shown in tin last week. A slight advance in London was offset by lower exchange and the local market was easier and about ¼ cents down at 32½ cents for all positions. Arrivals during December have been 3,530 tons at Atlantic and 105 tons at Pacific ports. Tin afloat is estimated at 4,765 tons.

Lead.

There was little demand for lead last week, but, notwithstanding, the market is easily holding steady with sellers of New York delivery in the outside market asking 4.85 cents for Missouri and 4.80 cents for de-silverized brands. The quotation of the leading interest is still 4.70 cents. For East St. Louis the market is continued at 4.40 cents.

Zinc.

Demand is very quiet, but prices are at least nominally unchanged from the basis of East St. Louis at 4.90 cents. The Metal Exchange quoted prices unchanged, New York delivery at 5.25 cents and East St. Louis at 4.85 cents for spot and December, against 4.90 cents asked and 4.90 cents for January, against 4.95 cents asked.

Other Metals.

Quotations on other metals in New York are as follows:

Aluminum Powder .....60 to 65 cents per lb.
Aluminum (in 50-ton lots) 99% and purer..25 cents per lb.
Antimony (Chinese and Japanese).....4.55 cents per lb.

New York Old Metal Market.

The following prices are current for old metals:

	Buying	Selling
Copper, heavy	10⅞ to 11⅛ cents	11⅞ cents
Copper, light	8⅝ to 8⅞ cents	9⅞ cents
Brass, heavy	5¼ to 5½ cents	6¼ cents
Lead, heavy	3⅞ to 4 cents	4¼ cents
Lead, heavy	3⅞ to 4⅛ cents	4½ cents
Crucible copper	11¼ to 11½ cents	12¼ cents
Zinc	2½ to 2⅝ cents	3 cents

Chicago Old Metal Market.

Chicago wholesale dealers' prices are nominally as follows:

	Buying	Selling
Heavy yellow brass	5 to 5¼ cents	6¼ cents
Brass, light	4 to 4½ cents	5½ cents
Red brass	8 to 8½ cents	9 cents
Copper, heavy	9½ to 10 cents	10½ cents
Copper, light	7 to 7½ cents	8½ cents
Lead, heavy	3½ to 3¾ cents	4 cents
Zinc,	2½ to 2¾ cents	3¾ cents

In the New York Supply Market.

New York, N. Y., December 27, 1921.—With prices adjusted to new inventory values and the decks cleared for 1922, the New York plumbing supply trade enters the marking-time period prior to replenishing stocks for spring business.

As reported last week, steel pipe and enameled ware have found lower price levels, while other lines, such as brass manufactured goods and soil pipe, which are probably below real values, have not been advanced. The times are not propitious for moving prices in that direction but the consensus among local jobbers is that something of the kind will be announced a little later, possibly in the spring, when the demand strengthens. An advance in brass manufactured goods is said to have been considered by some manufacturers but it has been postponed indefinitely as the present demand does not justify such action.

This also is the situation as regards soil pipe, jobbers carrying considerable stocks over to the new year with only a limited demand. Manufacturers apparently take the view that a price advance under such circumstances would restrict the demand still further and thus lose in one way what it gained in another. Action in this line also may be looked for in the spring.

Wrought iron pipe maintains its former price level with a moderate demand, varying of course according to the building trade activity in each district.

The consensus is that there will not be much activity in any plumbing supply line for some little time to come, but local jobbing houses accept this as the normal condition at this time of the year and look forward to the spring for an all-round revival in demand. Stocks are low in all lines, except soil pipe, and the retail demand two or three months hence will be preceded by a call to the manufacturers.

The heating equipment supply market was the last to experience the slackening of demand but this is now lined up with the others, and manufacturers are steadily catching up with jobbers' stock orders.

In the Chicago Supply Market.

Chicago, December 28.—An average reduction of approximately 10 per cent in the price of brass goods was noted in the supply circle during the week just passed. This reduction was made by a firm that manufactures a large line of both plumbing and heating brass goods.

Business in plumbing and heating material is reported fair, with prospects for the new year very bright. One large manufacturer of plumbing equipment expressed the belief that 1922 would be a banner year as far as that business is concerned. "We expect next year to be a banner one," he said. "With the close of inventory time not far distant jobbers will no doubt start placing orders for replenishment of their stock. As no further price revisions are expected for some few months at the least, there is little likelihood that buying will be held off."

Heating business is reported to be a little better than was expected for this time of the year. Prospects for the future are bright, but no prophecies are being made at this time because of uncertainties in the building industry.

CONVENTION DATES.

January 17 and 18, 1922.—The 28th annual convention of the Wisconsin Master Plumbers' Association, to be held in the Gold Room, Hotel Wisconsin, Milwaukee, Wis.

January 24, 25 and 26, 1922.—The twenty-eighth annual meeting of the American Society of Heating and Ventilating Engineers, to be held in the Pennsylvania Hotel, New York City.

January 24, 25 and 26, 1922.—The annual convention of the Illinois Master Plumbers' Association, at Champaign, Ill. The sessions will be held at the Masonic Temple.

February 6, 7 and 8, 1922.—The annual convention of the Minnesota Retail Plumbers' Association. The city, where the convention is to be held, has not yet been announced.

February 14, 15 and 16, 1921.—The annual convention of the Ohio State Association of Master Plumbers, at Canton, Ohio.

February 20, 21 and 22, 1922.—The annual convention of Nebraska Retail Plumbers' Association, at Omaha, Neb.

March 7, 8 and 9, 1922.—The annual convention of the State Association of Master Plumbers in North Dakota, at Grand Forks.

March 13, 14 and 15, 1922.—The annual convention of the Indiana Society of Sanitary Engineers to be held at Indianapolis.

March 27 and 28, 1922.—The annual convention of the Kansas Master Plumbers' Association, at Salina, Kansas.

April 10, 11 and 12, 1922.—The annual convention of the Oklahoma State Association of Master Plumbers, at Shawnee, Okla.

April 17 and 18, 1922.—The annual convention of the Tennessee State Association of Sanitary Engineers, at Memphis, Tenn.

April 18, 19 and 20, 1921.—The next annual convention of Iowa Master Plumbers' Association, in Mason City, Iowa.

May 2 and 3, 1922.—The annual convention of Colorado Society of Sanitary and Heating Engineers. It has not yet been decided where the convention will be held.

May 12 and 13, 1922.—The annual convention of the Association of Master Plumbers of the State of Washington, at Tacoma, Wash.

May 15, 16 and 17, 1922.—The annual convention of the Kentucky State Association of Master Plumbers in Ashland, Ky.

May 22, 23 and 24, 1922.—The annual convention of the State Association of Master Plumbers of California, at Sacramento, Calif.

June 6, 7 and 8, 1922.—The fortieth annual convention of the National Association of Master Plumbers, in Detroit.

AMONG THE PLUMBING AND HEATING CONTRACTORS

Illinois

Chicago's 1921 Building Record Greatest in City's History.

Comparing building permits issued in Chicago during the year 1916, a banner year, and the year just closing, 1921 shows a decided gain. In fact, the showing made in 1921 exceeds in value any year in the City's history. Despite the fact that permits valued at more than $124,000,000 were issued during 51 weeks of this year the number of houses and flats needed to take care of the increase in population fell short approximately 3,000. Less than 12,000 new family units were constructed during the year.

During the year 1916 permits valued at $112,835,150 were issued. The number of permits issued during that year was 10,277. If the final week of the year just being rounded out were to be estimated, the amount would run considerably over the $125,000,000 mark, while the number of permits would be close to 8,000. This is a falling off from 1916 of about 20 per cent in the number of permits, but a decided gain in value, due chiefly to the advance in the prices of building materials.

In 1917 the number of permits issued was 4,838, valued at $64,236,150; in 1918, 2,529 permits, valued at $34,792,200 were issued; 1919, 6,589, $104,198,850; 1920, 3,745, $79,102,650.

For the week ending Saturday, December 24, 117 permits were issued. These were valued at $1,232,700. For the same week last year, only 28 permits were issued. valued at $537,600.

Notwithstanding the excellent showing made this year, it is expected that 1922 will be written down in the annals of history as the best building year the city has yet seen. Plans are now being prepared for many large structures, chiefly of the hotel, apartment and office building type, and considerable residence work is contemplated. Contractors throughout the city look forward to a spurt in building activities during the next year, and are quite confident that such will be the case as much of the building material is expected to take a drop and labor disputes will be settled by that time.

Chicago and Vicinity.

J. J. Daly, 408 North Wells Street, has been awarded the contract to install plumbing in the three-story apartment building to be erected on Washington Boulevard, near Le Clair Avenue. The structure will contain apartments for thirty-nine families and will measure 100x150 ft.

Noble & Thumm, 2313 Lincoln Avenue, have the plumbing and heating contracts on the two-story flat building being erected at 5830 North Hermitage Avenue, also the plumbing in the public garage building to be erected in the 3700 block on Broadway. Heating in this structure will be installed by the E. J. McDonough Co., 350 North Clark Street.

M. Rest & Son, 710 West Fourteenth Street, will install the plumbing system in a one-story public garage building, 50x180 ft., to be erected at 3523-3525 North Cicero Avenue.

The M. J. Corboy Co., 178 West Randolph Street, has the plumbing contract on the $150,000, two-story residence and store building to be erected at the southeast corner of Sixty-third Street and Drexel Avenue. The structure will contain six stores.

The E. Baggot Co., 55 East Lake Street, and the L. H. Prentice Co., 328 Sherman Street, have the contracts to install plumbing and heating, respectively, in the $100,000 residence to be erected at 1408 Astor Street, for J. T. Ryerson. The building will be five-stories, 40x110 ft.

T. H. Killian, 874 Center Street, Winnetka, has secured the plumbing contract on the two-story residence to be erected at 445 Sunset Road, Winnetka, for R. Dalsmar.

The Standard Piping Equipment Co., 30 North Elizabeth Street, has been awarded the heating contract on the $50,000, one-story auto service station, 60x120 ft., to be erected at 15-19 South Racine Avenue, for F. M. Feldman.

F. Dilzer, 58 West Kinzie Street, has the heating contract on the warehouse, office and bakery building to be erected on Oak Street for the National Tea Co. The structure will be three stories, 100x125 ft., and will cost $200,000.

The E. J. Claffey Co., 10 West Illinois Street, will install the heating system in the seven-story warehouse building, 100x100 ft., under construction on Clark Street, near Fullerton Avenue, for W. C. Reebie & Bros.

Carswell & McCabe, West Chicago, have been awarded the contract to install plumbing in the one-story warehouse and condensing plant building, to be erected in West Chicago, for Reid, Murdock & Co.

Daniel E. Kinsella, 7309 Vincennes Avenue, and the Phillips-Getschow Co., 130 West Kinzie Street, are to install the plumbing and heating systems, respectively, in the $80,000, three-story office and barn building now being erected at 405 North Albany Avenue, for the Bowman Dairy Co.

George J. Speck, East Moline, will install the plumbing system in the $55,000, three-story grade and high school building, to be erected in Victoria, Ill.

Kentucky

Louisville.

Plumbing business continues fairly active as a whole due to very mild weather which is resulting in new work progressing, although there are but few large jobs. However, a few new residence permits are being issued almost every day, and reports received from the general building trades indicate that 1922 will be a very active year. The producers of building supplies are running full blast this winter to have stocks of brick, cement, lime, etc., on hand to meet an anticipated heavy demand.

The P. H. Meyer Co., which is beginning to reach the near completion stage with its contract on the Inter Southern Building, Louisville, claims that it is one of the largest jobs ever handled here. There are two 10-inch waste pipes to carry off the roof water, and a 10-inch waste pipe to carry the water from plumbing fixtures. About 350 fixtures are being installed in the new building. The building will require 15,000 sq. ft. of radiation. There will be one 8-inch and one 10-inch main in the heating system.

Texas

San Antonio.

A. H. Schafer has secured the plumbing contract on the new residence for Mrs. Jennie Rue on River Avenue.

Chalkley Bros. have the contract to install plumbing in the store building to be erected for Berman & Zadek on Houston Street. The structure will be divided into a number of small stores.

The following contractors submitted plumbing and heating bids on the residence of Dr. C. C. Cade to be erected in San Antonio; Reiwald Company, $1,855.44; Jud & Ormand, $1,653; Kirkwood & Wharton, $1,933; Open Shop Plumbing Co., $1,752; West & Gutzeit, $1,590. The contract has not yet been awarded.

The contracts to install plumbing and heating in the fourth unit of the American Legion Tubercular Sanatorium to be erected in Kerrville were awarded, respectively, to A. H. Shafer, San Antonio, and John L. Martin, Austin.

Virginia

Roanoke.

The Simpson-Basham Plumbing & Heating Co., 22 Kirk Avenue, West, has been awarded the contract to install plumbing and heating systems in the new Phipps apartment building in this city.

Forbes-Weddle & Co. have secured the contracts to install plumbing and heating systems in the new $35,000 residence of Mrs. R. Fairfax and the new $21,000 residence of Mrs. T. T. Fishman.

Lynchburg.

P. V. Edmonds, 210 Eighth Street, has the plumbing contract on the new Rivermont grammar school. The Johnson-Longworth Co., Richmond, has the heating contract on this structure.

Pennsylvania

The Building Outlook in Philadelphia.

The building trades here are on the verge of a distinct and satisfying boom, and while it cannot be said that purely domestic enterprises are creating any volume of business, the projection of numerous industrial plants, additions and betterments, plus current and soon-to-be-initiated office construction make things appear bright for the wielder of pipe-wrench and caliper gauge, T-square and level.

Municipal projects constitute no small portion of the proposed work, and many thousands of feet of water pipe are to be laid in addition to the building or remodelling of numerous school-houses. Work on the large library building on the Parkway, on which plumbing contracts have not yet been let, is again under way. What was formerly the Parkway building, now being remodelled and re-named the Center City building, constitutes in itself a contract for $1,100,000, which calls for complete re-arrangement and for new installations of the plumbing and heating systems. The general contract has been let to Irwin & Leighton; the plumbing and heating is understood to be unalloted as yet. The big Atlantic Refining Company's building at the northwest corner of Broad and Pine Streets, which was halted in construction a year ago, before the foundation was finished, is once more under way. It will be twenty stories high and involves some extensive plumbing and heating installations of the most modern type. Much interest is taken, incidentally, in the possibility of this building being heated by an oil-burning plant.

Curiously enough, the Atlantic Refining Company and other Standard Oil corporations have stubbornly resisted any attempt to get them to install oil-burning plants and have given little encouragement to companies engaged in developing such plants. There is some local speculation as to whether some enterprising industrial engineer may not be able to overcome the traditional conservatism of these interests, particularly in view of the comparative nearness of huge storage tanks of fuel oil on the lower Delaware.

Among other building projects under way is the Flint Building, between Race and Vine on Broad Street, and the Robert Morris hotel, which is a ten-story affair to be superimposed on what is now known as the Wesley Building, at 17th and Arch Streets. William M. Anderson has the plumbing contract for this latter, and will install some 200 bathtubs, besides closets, lavatories, etc. This building is to be unique in that it will be an office-building for twelve stories up, and the installations for a typical hotel structure will have to be transported above these, even separate main drains being shoved through the old structure in order to keep from overloading the piping of the office building with the waste from the ten stories above it.

A new 18-story structure, to house a bank and numerous offices, is to be erected on the site of the old Colonnade Hotel at the southwest corner of Chestnut and Fifteenth Streets. It will cost at least $4,000,000. Who the architect is, has not yet been announced by Albert M. Greenfield, central realty broker, who is announced as the purchaser from Bonwit, Teller & Company. This work may not be commenced until early fall. A smaller building at the corner of Fifteenth and Ionic Streets, adjoining the hotel site, has been purchased and will be razed to make way for a heating and power plant for the new office building. This real estate transaction, which is in itself unimpeachable evidence of renewed activity in construction work here, is the second largest transaction made in Philadelphia during the past decade.

Another contract of interest because of its association with the historic shrines at Independence Square is the central heating plant installation which is incorporated in the $150,000 remodelling and restoration contract which covers the Old City Hall, at the northeast corner of Independence Square. This work is being done by Austin, Gorham & McIlvaine Company, at a cost of $24,390.

As for municipal enterprises generally, the waterworks extensions come first. A tremendous market for wrought iron and cast iron pipe is opened up by the recommendations of engineers, who, more than a year ago, declared for extensions and improvements to the present system, which will ultimately cost more than $100,000,000. These include a new intake far up the Delaware river, in order to get above the contamination from industrial plants which now threaten part of the city's water supply. Under the present administration about $82,000 has been spent on contracts for service mains and half a million on supply mains. These latter feeders are 30, 36 or 48 inches in diameter, according to the territory served. A 48-inch main has been laid in west Philadelphia territory and the water pressure has been stepped up from 20 pounds or less to from forty to sixty pounds. Improvements at the principal pumping station have involved plans calling for $450,000 expenditure at Torresdale to date. At Lardner's point $250,000 worth of work has been put under contract, where high pressure service has for some time demanded extra safe-guards and improvements to the system.

A repair shop, now being erected at 29th and Cambria Streets, is under general contract to the Robbins Contracting Company. Edward F. Roberts has the heating and auxiliary contracts, which may include an oil-burning installation. James D. Parker has the plumbing and piping contract.

A total sum of $5,259,915 has been expended or is under contract for the city at large. For piping, Harry H. Eyre has the contract for a 12-inch main across Frankford Creek at Bridge Street. Curtis Bros. have the contract for a 24-inch main from Lardner's Point pumping station to Frankford Avenue. M. and J. B. McHugh have contracts covering numerous mains of 12-inch and 16-inch pipe; a 16-inch main on Huntingdon Street, from 29th to Ridge Avenue; also on 26th Street, Sedgeley to Lehigh Avenue, 18th Street, Glenwood to Norris and on Gratz Street, Berks to Jefferson. They will also install a considerable length of 12-inch service mains on Stenton Avenue, from Germantown to Lehigh Avenue. George S. Dobbin has contracts covering 6-inch, 8-inch, 10-inch and 12-inch pipe in various localities.

Several new school projects have been announced, and in some cases where school buildings are to be abandoned, it is more than likely they will be converted into small manufacturing plants. In the northwest section of the city the Heston school is to be replaced with a twelve-room building; the Hopkinson with a 28-room building; the Lincoln with a 36-room building; the Stevens with a 12-room building. Meade and Muhlenberg schools will be replaced with a new structure at the Meade site, to contain assembly, playroom and thirty class and study rooms. The Reynolds school will be replaced, four junior high schools are to be erected in the northern, central, southern and west Philadelphia sections. Improvements are contemplated in a dozen other buildings. Most of all, the foregoing school work contemplates considerable plumbing and heating work. In toto, for the districts named, 166 classrooms are to be added and $5,401,250 will be appropriated.

Buildings now under construction or authorized are not included in the above program, which is expected to be authorized during the coming year.

Building Trades in Philadelphia Will Not Reduce Wages.

Capital which has been hesitating to become interested in much-needed building enterprises in this city will have a much more solid foundation on which to erect projected enterprises for the coming year, according to M. G. Sellers, secretary of the Heating and Piping Contractors' Association. He advances this conclusion as a result of the meeting held late last week, at which representatives of the various building trades agreed not to attempt any further wage cuts for the coming year.

"By assuming this guaranty of wage conditions for an entire season the building trades are doing an unusual thing," said Mr. Sellers, "and it is done for one principal purpose, which is that capital which has been waiting for readjustment in the building trades, will see that stabilization has been effected so far as the labor market is concerned. It is not believed that the coming year is the right time to make any reductions, and so this move has been made to promote the building which must be done."

Philadelphia building, therefore, will be done on the same schedule as became effective in the settlement last summer, but it will run, as was then provided, from January 1 until January 1. "The labor unions have disregarded the first point of contact, which is that of the public demand for their services," commented Mr. Sellers, "but as there seems to be no indication of a recession, and this does not seem the best time to force the issue, the employers have agreed to assume the risk, which is not a small one, in view of the fact that nobody can tell just what is likely to happen before the end of the building season."

The schedule made effective is as follows:

"Bricklayers, masons, plasterers, $1.00 per hour.

"Carpenters, elevator constructors, electricians, iron erectors, lathers, plumbers, slate and tile roofers, sheet metal workers, steam fitters, softstone cutters, hoisting engineers, $.90 per hour.

"Cement finishers, dock builders, marble setters, painters, granite cutters, tile setters, pipe coverers, sprinkler fitters, $.80 per hour; slag roofers, $.60 per hour.

"Overtime: Double time to be paid for work on holidays, Saturday p. m., Sundays, and for time after four hours of overtime.

"One and one-half time for overtime not exceeding four hours.

"The working week to be 44 hours.

"Ten cents an hour additional for night shift."

New York

The Labor Situation in New York City.

Developments in the labor situation in the building trades of considerable importance to the plumbing and heating industry have occurred within the past week. In the first place, William H. Chapman, walking delegate of the Journeymen Plumbers' Union, has resigned his position at the request of the members of that organization. Chapman, it will be recalled, served five months in the penitentiary following his conviction last February with Hettrick, on a charge of coercion, and is still under indictment along with Brindell, the "Czar of the Building Trades," on a charge of extortion. Since his release, however, he has continued active in the affairs of the Journeymen Plumbers' Union.

The question whether he will be permitted to retain his membership in the union is still being debated, it is understood, but the organization has insisted on his giving up his activities as walking delegate. According to reports, however, this move is not to be regarded as evidence of hostility on the part of the organization towards Chapman. On the contrary, it is said that the motion that he be asked to resign as walking delegate was supported by his best friends in the union, who saw in this development a chance to be of real service to him. The story goes that these friends have asked Samuel Untermyer, chief counsel of the Lockwood Committee, whether it would not be possible to ease up on the prosecution of Chapman on the extortion charge in view of his resignation from the union. Mr. Untermyer, it is said, is inclined toward leniency on condition that the journeymen plumbers in the future will agree to exclude convicts from holding offices in their organization.

A development in the labor situation of even more interest to plumbing and heating contractors of the city is the action taken by the Plasterers' Union in connection with the nineteen building trades reforms demanded by Mr. Untermyer. The Plasterers' Union has notified Counsel of the Lockwood Committee that it is ready to acquiesce in the demands made by him and to comply in every detail with the elimination of regulations and abuses complained of by the Lockwood Committee. Although it does not directly affect their own industry, the master plumbers are enthusiastic over the significance of this development because they have reason to believe that it is the first fruits of the Lockwood Committee's constructive efforts to effect a general improvement in labor conditions in the building trades, along the lines of removing those arbitrary restrictions which have impared efficiency, limited production, and increased costs.

The changes demanded by the Lockwood Committee in the by-laws and local rules of the unions were made public recently in a circular letter sent out by Mr. Untermyer to Hugh Frayne, organizer of the American Federation of Labor, Patrick Crowley, president of the Building Trades Council, and to the heads of all the building trades labor organizations which are not represented in the Council.

Mr. Untermyer separated the recommendations under nineteen heads. The first fourteen lay down general principles, but are supplemented by explanation and argument based on testimony taken by the Lockwood Committee

from both employers, union officials and workmen regarding the effect of certain rules of particular unions. The remainder lay down specific requirements for changes in the rules of the plasterers', metal lathers', plumbers', painters' and cement masons' unions.

As to the conditions under which unions admit new members, the requirements are:

"1.—All restrictions on membership must be removed. Books must be kept open at all times for admission of members who can qualify under reasonable regulations as to character and ability. This demand is due to the discovery that many unions prevent or discourage entrance of new men into their trades that they may keep the supply of labor far below the demand.

"2.—The initiation dues shall in no event exceed $50, and should be payable at the option of the new member, one-half in cash and the remaining half within three months after initiation.

"3.—All limitations on the number of apprentices in any trade must be repealed and prohibited. Where there is an age limitation for apprentices in any existing constitution or by-law, it should be increased from the prevailing ages of sixteen or eighteen years, to the age of twenty-five.

"4.—The issuance of permits or permit cards to non-union men, with or without pay to the union for such permits, as a condition of allowing men to work with union men must be rigidly forbidden by their constitution. The right of membership in the unions to all such men should automatically do away with this abuse.

"As to stricter financial supervision of union funds:

"5.—In order to protect members of unions against the misappropriation of funds and to secure accountabitity to them by their officials for the use of such funds, the constitutions should be amended, wherever necessary, so as to require accurate books of accounts to be kept, in which shall be entered and accounted for all receipts and disbursements.

"All payments of over $10 shall be made by check, and these accounts shall be audited semi-annually by independent chartered accountants to be elected annually by the members at the annual meeting at which the officers are elected, and there shall be presented a detailed account of all receipts and expenditures of the year, with the right of every member to examine the same. There shall also be mailed to each member a copy of the detailed semi-annual report of the accountants."

Section 6 deals with the practice of fining employers for disobedience of the letter and spirit of union rules, which is described as a "conspiracy to extort money" and therefore criminally illegal. The following instances are enumerated:

"(a.)—Forcing employers to pay fines to the unions for failing to appear before the Executive Committee in response to the demand of the latter.

"(b.)—Fining employers because members of the union worked overtime for them for double pay, but without securing express permission in each instance from the Executive Committee.

"(c.)—Fining employers for allowing painters to fill in plaster cracks when painting the walls and ceilings.

"(d.)—Fining the employers because the men stick cornices instead of running them on the walls, in violation of the union regulations.

"(e.)—Fining the employers for poor work done by the members of the union and compelling the employers to have the work done over at their own expense.

"(f.)—Compelling the builder to run casts, plates and molds on the job instead of sticking them and to take down the cast if it is stuck instead of being run on the job, although satisfactory to the owner, the architect and the public authorities."

Section 7 demands the abolition of all contracts between unions and employers' organizations, which agree that union

Blake Tapped Spigots

Blake Way

Old Way

Spigot to fit Standard or Extra Heavy Hub

No.	Tap	Spigot
G-4100	1¼-in.	2-in.
G-4105	1½-in.	2-in.
G-4110	1½-in.	4-in.
G-4115	2-in.	4-in.

Blake Insertable Joint for Durham Work

No.	Tap	Hub
G-4150	1¼-in.	2-in.
G-4155	1½-in.	2-in.
G-4160	2-in.	2-in.
G-4165	2-in.	4-in.

Ask your Jobber for Blake Specialties—they are quality goods.

Catalog of complete line will be sent you on request

Blake Specialty Co., Rock Island, Ill.

SERVICE When and Where It Is Needed

JSC

Johnson Fool-Proof Thermostat.

The basic principle of our organization is **Service** and Co-operation with the heating man who has temperature regulating equipment to install or repair. Our engineers are specialists in this line—ready to serve you at all times.

The JOHNSON SYSTEM OF HEAT REGULATION

is the oldest on the market and absolutely dependable. A special feature is the "Sylphon" Metal Diaphragm Valve—the greatest improvement ever made in temperature regulating apparatus.

The Indestructible "Sylphon" Metal Diaphragm Valve.

Branches in Principal Cities Write the One Nearest You

Johnson Service Company
Milwaukee, Wis.

FEMCO

Sanitary Vent Tees and Crosses

WE carry a complete line—both Regular and Long—in all standard sizes.

Every piece is water pressure tested at our factory and guaranteed correct.

TANK TRIMMINGS

A complete line of water pressure tested fittings for both high and low tanks.

TUBULAR GOODS

Lavatory and Sink Traps—FEMCO Cast, Semi-Cast, Anti-Syphon, and Bent Tube. Cast and Wrought Connected Waste and Overflows. Cast nuts and die cut threads only.

All sizes and styles of Bath and Basin Supply Pipes.

Your jobber stocks Femco Products

The Frost Manufacturing Co.

Kenosha - - Wisconsin

labor shall not be furnished to employers who do not belong to the employers' association. This has particular regard to the existing contracts between the Building Trades Council and the Building Trades Employers' Association. An instance of the evil worked by it is the agreement between the Marble Industry Association of employers and their workers, whereby $15.25 is fixed as the day's pay of a setter and helper in consideration of permission to the employer to charge $28.25 a day for their services.

Section 8 requires that the unions cease supervising and directing the business arrangements of employers outside of the relations of the employers with their workers. Examples of such improper supervision are: (a.) Dictation by the union as to the form of contracts made by owner, builder, architect, contractor or sub-contractor—it being always provided that the union has a right to insist that all contracts shall call for union labor only. (b.) The insistence of some unions that the contractor who furnishes the workmen must also furnish the material. (c.) The practice of the unions in forbidding a builder to complete a contract abandoned by a contractor by using another contractor or by taking over the job himself; the objectionable rule is that the union must take charge of the job, selecting the foreman without regard to the employer. (d.) The practice of unions of "intruding into the realm of art" and dictating to owners and architects changes in artistic styles and character of work which have been approved as to safety and sanitation by the proper civic authorities. (e.) The forbidding of the use of approved labor-saving machinery and methods.

Under this last sub-section, five examples are given: The requirement of the metal lathers that employers who mix reinforced concrete at their shops shall pay a stiff bonus into the sick benefit fund of the union to make up for their savings in labor time by such a process; compelling an employer to use wire lath in ceilings, contrary to specifications approved by the Building Department; the rules of the plasterers limiting the size of finished blocks, which may be made in shops and "stuck on" to walls and ceilings; the destruction of models which have once been used to increase the demand for workmen to make new models; prevention of the use of a small quantity of plaster of Paris in the making of cement mantels to increase the production of each mold from one to four a day.

Section 9 requires the abolition of arbitrary penalties such as the payment of a quarter of a day's extra pay to all men whom the paymaster was ten minutes late in reaching.

Section 10 requires abolition of rules that forbid the installation of fixtures which are put together at factories rather than by the workmen on the job, such as washstands connected in series, the anti-siphon trap device and certain gas fixtures which can be more cheaply put together by machinery than by hand.

Section 11 calls for the abolition of the rules punishing employers and foremen and workmen for "rushing." "Every member should be left free to do as much work as he sees fit in a working day." The rule against rushing, the document says, is demoralizing and undemocratic, cuts ambitious, able men back to the standards of the laziest and most inefficient and is injurious to the repute of labor.

Section 13 amends union constitutions so that workmen in no trade will be limited to five days a week and no workman shall be punished for working a day which is not a legal holiday, such as St. Patrick's Day. The argument of the painters that five days is destructive of their health because of their exposure to white lead poisoning is called "shallow and dishonest" on the ground that on outside work the white lead fumes are disseminated and not dangerous, and on inside work white lead is not used in dangerous proportions. The "five day week" in one trade slows up the work in all the associated trades and increases costs. A workman should be free to add to his income by working a half day on Saturday if he desires.

Section 13 says that a delegate or business agent convicted of a crime in connection with his union activities should be forever barred from such an office in the union.

Section 14 would prohibit limiting the amount of day's work to be done on a job, as is done by Local 314 of the plasterers in Long Island City.

The special changes demanded of particular unions follow:

The Plumbers (Section 15) must rescind the rules (a) providing only one helper for two plumbers; (b) forbidding the helper to use tools while a plumber is also using tools.

The Cement Masons (Sec. 16) must cease requiring that where only two men are employed one must have a foreman's wages, and when four men are employed, the foreman must not handle tools; they must cease interfering with the employers' right to discharge a "shop steward" or censor as to union conditions on the job.

The Metal Lathers (Sec. 17) must cease insisting that one of their men must be hired as a foreman on all concrete pouring jobs, whether there is lathing in the job or not; they must cease insisting that on a one-man job the one man must get a foreman's pay.

The Painters (Sec. 18) must cease enforcing the rule that an employer who has his office in the territory of one local union, and is doing work in the territory of another must pay the highest wages paid in either territory. This tends to suppress competition, the committee ruling says, and prevents contractors from one city from competing for work in another.

The Painters must also (Sec. 19) quit limiting apprentices to one apprentice to ten men and not more than two apprentices to a shop. This will result, the report says, so there will soon be "only one painter to every ten now in the trade." The limiting of the size of the paint brush to 4½ inches, as in Brooklyn and Long Island, must also cease.

Commenting on the above recommendations, William P. Kenneally, vice-president of the Board of Aldermen of New York City, formerly a member of the Executive Committee of the Building Trades Council, and a representative of the steam fitters in that organization, said he believed that the most important demand was that all restrictions on membership should be removed.

Mr. Kenneally said he was against the fining of members of unions called attention to by Mr. Untermyer. He didn't discuss the other demands.

Hugh Frayne, speaking for the American Federation of Labor, said he could not discuss the Untermyer recommendations at the present time, but that it was probable that they would be formally discussed by the Federation and a detailed answer forthcoming within the course of a few days.

CODE OF ETHICS OF THE NEW YORK BUILDING CONGRESS.

Warm expressions of approval are being heard in the New York plumbing and heating industry regarding the new "Code of Ethics" for the building industry which the New York Building Congress has just ratified. The code, which represents many months of study and investigation by a special committee, is expected to cure many of the existing evils and practices now adversely affecting the progress of all branches of the building trades, although, as several local master plumbers pointed out in discussing the matter with a representative of "Domestic Engineering," the value of the code is entirely dependent upon the willingness of individuals to acccept it. In other words, the program of ethical procedure which the New York Building Congress has drawn up is in no sense mandatory. It merely points out the normal obligation of each element in the industry to its co-workers. It is hoped, however, by those who have worked diligently in drawing up the document that it will be formally adopted by the various

The Trap You Want

The condensation problem is one of the hardest the steamfitter has to solve. Unless the water is returned to the boiler as rapidly as it accumulates, the heating system becomes water-logged and inefficient.

The Thermo Syphon Trap

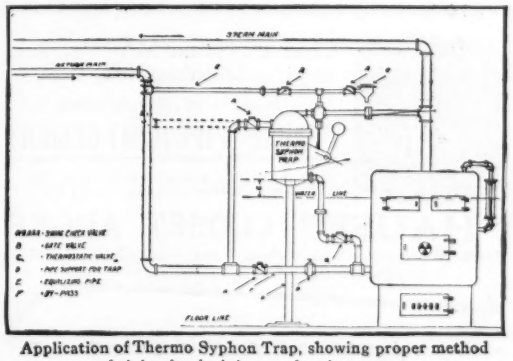
is recognized by prominent heating experts as the most positive means yet devised for returning condensation direct to boilers, from any type of steam heating systems.

In addition, it eliminates all air, promotes circulation and prevents burning of boilers. No pumps, receivers or air relief tanks necessary where this trap is used. Noiseless in operation. Works equally well on old or new installations.

Write for latest Bulletin describing fully the various uses of this trap.

LYTTON
MANUFACTURING CORPORATION

Trap Specialists · ***Franklin, Va.***

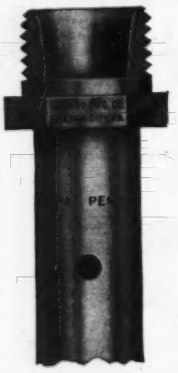


Application of Thermo Syphon Trap, showing proper method of piping for draining any heating system.

Absolutely Indispensable

This is the verdict of the business men who have used our Standard Portable vise bench and pipe bender. Several improvements. Write for catalogue and list of hundreds of satisfied customers.

Standard Iron Works, Inc.
508-10 E. 74th St. - New York City



The GERARD Brass Circulating Tube
Outlasts the Boiler

Every range boiler must have a circulating tube and experience has proven there is nothing better for this purpose than seamless drawn annealed brass tubing.

The Gerard Tube runs entirely through cast brass bushing and is swedged out over end of bushing. No solder used. Most satisfactory circulating tube made.

Furnished in sizes to suit All Range Boilers.

Write for folders and particulars

Gerard Mfg. Co.
DICKSON CITY, PA.

M. - V. B.

Closet Tank fittings are not the cheapest and are used by Manufacturers who want the best.

LOOK IN THE TANK

Ballcocks, Flush Valves, Hinges, Flush Lovers, Etc.

Morency - Van Buren Mfg. Co.
Sturgis - - Michigan

Chas. F. Hause Mfg. Co., Inc.
Omaha, Neb.

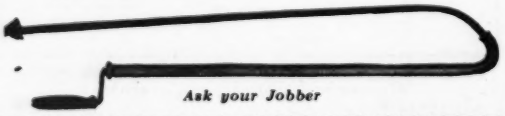
Makers of the famous

"HAUSE" PIPE JOINT CEMENT

in liquid and powder form. Sets like gum. Allows no leaks. And the

"HAUSE" CLOSET AUGER

Made of seamless brass tubes. Indispensable to plumbers



Ask your Jobber

associations in the different branches of the building trades, and, so far as the local associations of the plumbing and heating industry are concerned, the probabilities are that the matter will be brought up for discussion at their next meeting.

Although in the past, of course, there have been various codes that applied specifically to single trades or professions in the building industry, this is the first time that a program has ever been formulated that takes in all the elements concerned and applies a program of ethical procedure to them. Here is the document in full:

"Code of ethics for the building industry says it is unethical for any one engaged in the building industry or any of its branches:

General.—Article 1.

"Section 1.—To unduly or improperly increase the cost of work or to produce work or workmanship inferior to that contracted for.

"Section 2.—To falsely or maliciously injure the reputation or business of another.

"Section 3.—To offer or accept commissions intended to influence sales or contracts.

"Section 4.—To endeavor to circumvent the fair and reasonable enforcement of ordinances and safety and sanitary codes.

"Section 5.—To resort to or countenance 'shopping.'

The Owner.—Article 2.

"Section 1.—To call for unnecessary or full estimates on tentative projects, or from unacceptable bidders or to withhold proper facilities from those estimating.

"Section 2.—To refuse credit data and statement as to reality of the project.

"Section 3.—To deal directly with the contractor where an engineer or architect has been employed for full services, including supervision.

"Section 4.—To endeavor to improperly influence the architect's or engineer's decisions as to contract obligations.

The Banker.—Article 3.

"Section 1.—To fail to give due weight to the community value of improvements for which loans are desired.

"Section 2.—To fail to acquaint the borrower with all conditions (especially as to approval of materials and construction) under which the loan is made.

"Section 3.—To overload building costs with fees, commissions or bonuses not legitimately earned.

The Real Estate Broker.—Article 4.

"Section 1.—To misrepresent conditions or conceal any facts having an important bearing upon the real value of a property.

"Section 2.—To advise a type of development opposed to the community interest.

The Architect and Engineer.—Article 5.

"Section 1.—To act in any other than a judicial capacity in determining contract obligations; or to fail to require full performance equally by owner and contractor.

"Section 2.—To require a contractor to perform for him any part of the service which is generally recognized as the architect's work.

"Section 3.—To cover possible oversights or errors by indefinite clauses in contract or specifications.

"Section 4.—To withhold certificates for payment when properly due under a contract.

"Section 5.—To engage in the building trades.

The Contractor.—Article 6.

"Section 1.—To give, knowingly, work or workmanship inferior to that contracted for.

"Section 2.—To endeavor to supplant the architect or engineer with the owner.

"Section 3.—To submit to the owner, directly, without

the architect's approval or knowledge, any proposals or estimates.

"Section 4.—To fail to recognize his moral obligations to sub-contractors whose bids he has used in making his own proposal.

"Section 5.—To knowingly or carelessly underestimate the value or time of completion of any work.

"Section 6.—To withhold payment to sub-contractors and dealers for work or for materials for which he has received payment.

Sub-Contractors and Material Dealers.—Article 7.

"Section 1.—Knowingly to mislead through trade customs or terms, as to the real cost or quality of work, or materials, and to mislead as to time of completion of work or delivery of materials.

Labor.—Article 8.

"Section 1.—To restrict the quantity or quality of the output of the individual.

"Section 2.—To increase cost through arbitrary rules as to number of workmen employed or use of plant and equipment.

"Section 3.—To deny to any man the opportunity to learn and, when qualified, to practice a trade.

"Section 4.—To abandon the work pending the decision of disputes between trades."

Massachusetts

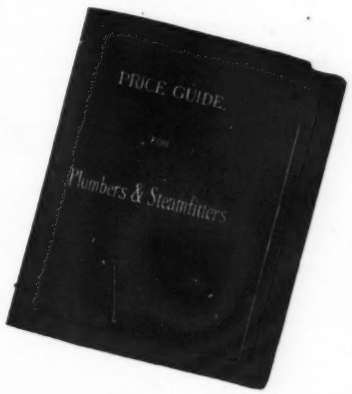
Boston and Vicinity.

Floor plans and elevations have been completed for Boston's largest hotel, the Bostonia, and specifications are now being worked out by Architects Desmond & Lord, 15 Beacon Street, and will be ready for figuring within about a month's time. The new hotel will be 12 stories high and will be the third largest hotel in the United States. Its construction and furnishings will cost approximately $10,000,000, and it is now planned to have everything in readiness to commence work late in March or early in April. There will be 1,233 sleeping rooms with private baths and outside light, only the Hotel Commodore and the Hotel Pennsylvania of New York City are said to be larger. The site of the hotel comprises an acre and a half, bounded by Columbus and St. James Avenues, Arlington and Providence Streets, all part of the old New Haven Railroad terminal property in Boston's Back Bay section. There will be entrances from St. James Avenue, Arlington Street and Columbus Avenue. Rooming accommodations for more than 2,000 guests will be provided. One floor will be set apart exclusively for women travelers. A landing stage for airplanes is another feature. Charles S. Averill, manager of the Bancroft Hotel, in Worcester, Mass., and William H. Sellers, manager of Young's Hotel, Boston, will manage the new hotel. The Thompson-Starratt Co. have been selected as builders; the Preferred Underwriters, Inc., of 75 State Street, Boston, have charge of the financing of the hotel. George B. Post & Sons, New York City, are consultants. Borings for foundations on the site have already been commenced. The heating and plumbing plans are now being worked out in detail. Both will be of latest design and are planned to excel, if possible, anything yet installed in any hotel in the country.

Plans are in preparation by Architect Arthur H. Bowditch, 44 Bromfield Street, for a modern 12-story office and banking building at 31 Milk Street, for the Beacon Trust Co., now located at 20 Milk Street. Charles B. Jopp, president. The bank will occupy the first two floors while the remaining ten floors will be devoted to offices. The structure will

A Guide to Bigger Profits

THE plumber or steamfitter who is not positively sure his figures are right on each individual item, stands a chance to lose contracts or to lose money on the ones he secures.



Page size 6x9½ inches.
300 pages.
Loose-leaf.
Best seven-ring binder.

The Plumbers' and Steamfitters' Price Guide

keeps you informed on current prices of all standard materials used in the trade. Gives exact costs and resale prices. Only necessary to copy figures on your estimate sheets or invoices. You can be assured they are right. No guesswork—no uncertainty. Revised sheets are sent to you covering price changes as they occur.

This Guide pays for itself over and over again in saving of time and preventing errors. You need this business help every day.

Write for details

Bareham & Saunders

Publishers of the

Plumbers' and Steamfitters' Price Guide

366 East Main Street Rochester, N.Y.

BARRETT

Sewer, Tide and Back Water Trap

Always Works

Positive Flush

Write for details

MANUFACTURED BY

James Barrett Mfg. Co. 115-121 Pearl St. Boston, Mass.

ACME DETROIT Drinking Fountain

Adjustable to All Pressures

A strictly sanitary fixture suitable for use in all classes of buildings. The price is right, too.

We make a line of high grade

Basin Cocks
Sink Bibbs
Drinking Fountains
Wash Tray Bibbs
Sill Cocks
Boiler Drain Cocks
Solder Nipples

If your jobber hasn't our goods in stock write us, giving his name.

Acme Brass Works, Detroit, Mich.

Eastern Representatives: Kessel & Muller, New York
Western Representative: H. E. Crum Jr., 79 W. Monroe St., Chicago. Ill.

NO ROOF IS SUPERIOR TO ITS FLANGE

Therefore, some PLUMBER is the father of every leaky roof.

The Bullard Roof Flange

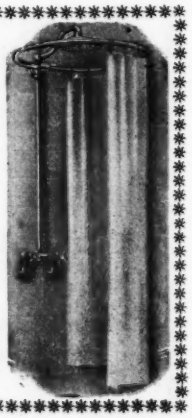
is acknowledged as the only PERFECT FLANGE by busy men who have made satisfying installations.

THE BULLARD SPECIALTY COMPANY, Tiffin, O.

Hudson Shower

No. 100 Complete Two Valve Shower

Send for Catalog No. 21 illustrating complete line of showers and bath fixtures



Hudson Brass Works
16 Nassau Street, Brooklyn, N. Y.

be of steel and concrete. The toilets will be of marble with mosaic floors. The heating apparatus will be located in the sub-basement and provision will be made for vacuum-cleaning, ventilating machinery, etc. Demolition of buildings now occupying the site will begin during January and construction work will commence in the early spring. No contracts have been awarded.

Contracts have been awarded Power Heating & Ventilating Co., of Boston, for the heating and ventilating of the new Everett High school. Its bid was $72,521. On the plumbing, Henry J. Lyons Co., also of Boston, was the lowest bidder at $20,480 and has been awarded the contract. The general contract was awarded Dec. 19 to Frank G. Coburn, of Brookline, at $425,500, as lowest bidder.

The Boston Chamber of Commerce will commence the erection of a new building for its own uses at Franklin, Federal and Congress streets, early in the spring and will award contracts so that work may commence April 1st. The structure will be eight stories, 181x154 ft. George R. Nutter of the trustees is chairman of the building committee. The structure will cost approximately $1,000,000.

The First National Bank of Boston is having plans prepared for a new banking house at Milk, Devonshire and Federal streets, on a plot containing 34,000 sq. ft. of land; ten stories, fireproof construction.

The city of Boston has awarded the general contract for constructing the primary and kindergarten school at Oakland and Kennebec streets, Dorchester district, to S. L. Milson Co., Boston. Contracts for plumbing and heating have not yet been awarded. J. P. Lomasney is chairman of the schoolhouse commission. The building will cost about $50,000.

Architects Mowell & Rand have completed plans for a theatre at Commonwealth Avenue and Harvard Street, and the R. D. Kimball Co., of Boston, have been chosen engineers. The structure will be of concrete, 102x210 ft.

Desmond & Lord, 15 Beacon Street, are architects for a new theatre for Newton, Mass., to cost $150,000. Contracts have not been let. Brick walls, reinforced concrete floors and roof, 153x68 ft.

Alterations, amounting to $40,000, are to be made to the summer home of Richard Mitton at Swampscott.

The J. P. Dwyer Co., of Boston, has been awarded the contract for heating the $40,000 private garage of the National Bottling Co., in Cambridge.

The S. C. Sperry Co., of Cambridge, has been awarded the general contract and will sub-let the heating and plumbing contracts for the fire and police station at Hull, which is to cost $180,000.

John V. Kimball, head of the Richard D. Kimball Co., heating and ventilating engineers of Boston, has been re-elected mayor of Malden for a third term. For the first time in many years there was no opposition to the re-election of a mayor.

The heating and ventilating contract for the $500,000 addition to the Brookline High school has been awarded to M. A. Dame & Sons, 80 Boylston Street, Boston, at $17,127, and the plumbing contract to Henry J. Lyons Co., 116 Summer Street, Boston. An interesting feature of the bids is their decrease over figures submitted a year ago when bids were invited on the same structure, the new bids showing a decrease of approximately 50 per cent over those last year. The addition will house 1,500 pupils.

Charles J. Gustafson & Co., of Worcester, have been awarded the plumbing contract on the new Girls' Trade School on High Street in that city.

Other Cities in the State.

Separate bids for the heating, ventilating and plumbing will be received by the town of Brookline, O. C. Gallagher, superintendent of schools, for a large addition to the school

at Greenough Street and Welland Road, to cost $550,000. Kilham & Hopkins, 9 Park Street, Boston, are the architects, and French & Hubbard, 260 South Street, Boston, are the engineers.

Fire destroyed the plumbing store of Otto J. C. Neilson, 464 High Street, West Medford, Dec. 24, entailing a loss to Mr. Neilson of about $7,500, which was fortunately covered by insurance, and a total loss of about $35,000 to the building and other tenants. The fire started in the early morning and assistance was called from three neighboring cities in fighting the fire. Mr. Neilson plans to open his shop on the opposite side of High Street in a new store there within a fortnight.

The City Hall at Quincy is to have an entire new heating and ventilating system installed and bids will be opened early in the new year for the work. Mayor William A. Bradford, of Quincy, who will award the contract, is a former president of the Massachusetts Master Plumbers' Association. A vapor system will be installed.

T. F. Crowell, of Brockton, has been awarded the contract for installing a new heating plant and a new plumbing system in the Ashland Street school, the contract being for $21,619. The other bids submitted were: A. F. Nordbeck, $25,325; Willard Hanson, $24,696; F. E. Mackie & Co., $23,376; Eastern Construction Co., $24,580.

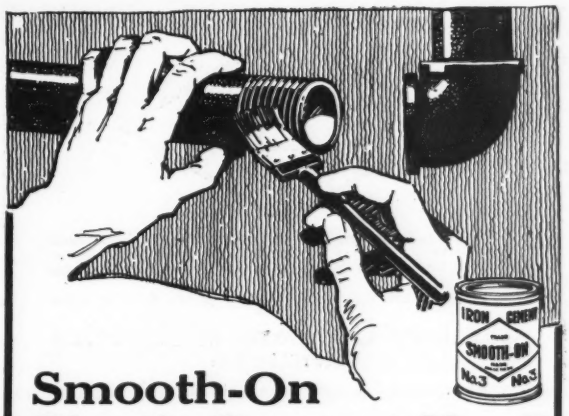
Daniel L. Hanson, of the National Trade Extension Bureau, was the speaker at the meetings of the Greenfield Master Plumbers' Association on December 14th and at the Beverly Master Plumbers' Association's meeting December 7th. At the Greenfield meeting, Mr. Hanson said that a canvass showed 120 new show windows in plumbing shops where dirty and cobwebbed windows had existed before; that 200 New England shops were advertising that had not done so before; the press was taking more notice of the industry and now "service" should be substituted on billheads for the word "labor." At the Greenfield meeting many of the supply men from nearby territory were in attendance and a luncheon was served. At Beverly Mr. Hanson made a plea for trade extension along broad lines which would be cooperative in its scope.

Fifty applicants for plumbers' licenses took the state examinations in Lowell December 17th, and Lowell plumbers state that they will be able to give employment to all who pass.

Connecticut

New Britain.

At a meeting of the New Britain Master Plumbers' Association in the Chamber of Commerce rooms December 12th, the apprenticeship situation was discussed at some length by the members. Daniel L. Hanson, of the National Trade Extension Bureau, spoke at some length on the subject, declaring that the American boys are not afraid of work today any more than they ever were; that they were not afraid to dirty their hands and they went eagerly into the garages and similar lines. They keep out of the plumbing business because the business doesn't look good to them. We must make it attractive. We must clean up our shops and put them on a par with electrical shops; we must give the American boy the idea that the industry is profitable by the appearance of our shops, by our advertising and by the positions which we individually occupy in our communities. Unless we can get apprentices, our industry will pass into other hands and will become merely a small part of some other industry, he said after a lengthy review of the situation.



Smooth-On Elastic Cement No. 3

—For Making Perfect Screw-Thread Joints

A screw-thread joint made with Smooth-On Elastic Cement No. 3 will not leak—the Smooth-On Elastic Cement expands in metallizing and so closes up any defective places which otherwise would cause leaks. Yet, the joint may be taken apart when desired.

Smooth-On Elastic Cement No. 3 is sold ready for use in paste form. It is applied to the screw-threads with a brush.

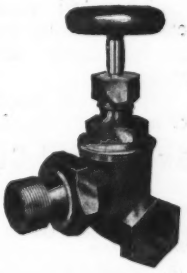
Write for our new Instruction Book No. 18—you will marvel at its contents.

301 *FOR SALE BY SUPPLY HOUSES*

SMOOTH-ON MANUFACTURING CO.
ESTABLISHED 1895
570-574 COMMUNIPAW AVE., JERSEY CITY, N.J. U.S.A.

CHICAGO OFFICE: 221 N. Jefferson St.
SAN FRANCISCO OFFICE: 56 Sacramento St.

KENNEDY



Your valves must frequently stand rough handling during installation, and careless handling in operation. Your profits and your peace of mind are both safe if you standardize on Kennedy Valves. They have proven themselves sturdy and dependable for almost half a century.

We could tell you a lot about Kennedy experience, Kennedy Service, Kennedy construction, and so forth, but we can prove Kennedy value better by a trial order. Will you let us? First send for the Kennedy catalog—it will help you make a selection.

MEMBERS THE NATIONAL TRADE EXTENSION BUREAU OF THE PLUMBING AND HEATING INDUSTRY. PERMIT Nº 76 REGISTERED

THE KENNEDY VALVE MFG. CO. ELMIRA, N.Y.

BRANCHES AND WAREHOUSES
New York, 95 John St. Boston, 47 India St.
Chicago, 204-8 N. Jefferson St. San Francisco, 23-25 Minna St.
Sales Offices: Philadelphia, Salt Lake City, El Paso, Winnipeg.
Export Office: 95 John St., New York City.

SAACO

You have, no doubt, seen our advertisements in previous issues covering various specialties. We trust you will not overlook SAACO brand Soil Pipe and Fittings made at our Linfield plant.

Our goods are right. Service and prices must be right.

Sanitary Company of America
LINFIELD, PA.

HAMBURG Pneumatic Tanks

Ready for immediate delivery in the following sizes:

Horizontal Tanks—from 30 in. by 6 ft. to 42 in. by 14 ft.

Vertical Tanks—30 in. by 6 ft. and 36 in. by 6 ft.

Write for Catalog No. 5.

HAMBURG BOILER WORKS
Hamburg, Berks Co., Pa.

We also manufacture Steam Boilers, Hot Water Boilers and Plate Steel Drums

DESOLVO and COLD WATER

is the plumber's best helper. Clears up obstructed pipes quicker, better and with less labor than by using any other method.

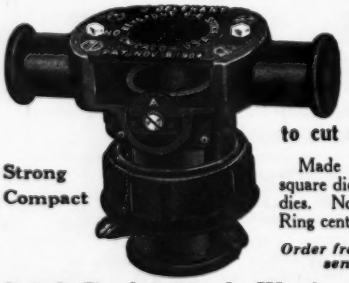
Keep a supply on hand. Your jobber has it.

THE CHAMBERLAIN CO.
PITTSBURGH, PA.

Canadian Distributors:
Chamberlain-Desolvo Co., 109 Church St., Toronto, Ont.
No Branch Offices in the United States

"K-K" Cleans Closet Bowls the Sanitary Way

Prices Reduced Dec. 1st



The Keystone Die Stock

is guaranteed to cut straight threads

Strong Compact

Made for Armstrong and square dies. Easy to change dies. No bushings to lose. Ring centers pipe.

Order from your Jobber or send direct to us

B & B Tool & Mach. Works 4740 N. Clark St. Chicago, Illinois

New Haven.

Fenney & Mancini, 128 Columbus Avenue, have the plumbing and heating contract on a large residence being erected at 120 Fulton Street in this city.

John Bischoff, Jr., 20 Second Avenue, is installing plumbing and heating systems in three residences being erected in Beaver Hills, the Highwood grammar school and the Montcalm grammar school, and in a residence on Chapel Street.

Leo Setlow, 174-180 Orchard Street, has the plumbing and heating contract on a new community playhouse, which is to be erected in Meriden, Conn.

Other Cities in the State.

A new junior high school will be erected during the winter at Hartford to cost approximately $300,000. W. T. Marchant of Hartford is architect.

The general contract for the new Meriden Hospital has been awarded the H. Wales Lines Co., of that city, and the sub-contracts will soon be awarded for the $300,000 structure.

A petition in bankruptcy has been filed by John J. Silva, plumber, of New London, showing liabilities of $5,612 and assets of $2,590.

Meriden master plumbers met December 13th in Journal hall in that city with President Lynch in the chair, and after a brief business session they were addressed by Daniel L. Hanson, of the National Trade Extension Bureau, who spoke on the importance of salesmanship as carried out through advertising and the use of show window displays and salesrooms.

Rhode Island

Providence and Vicinity.

The plumbing firm of Dickens & Kusher, of Providence, has been dissolved; the business will be continued at 239 Rochambeau Avenue, by M. W. Dickens.

The Frank Dupuis Co., Inc., of Pawtucket, has the contract to install plumbing in the new three-story building for the W. T. Grant Co., at Mathewson and Westminster Streets.

Architects F. P. Sheldon & Son, 1008 Hospital Trust Building, Providence, have completed plans for a $45,000 building to be erected on Lowden Street for the Providence Braid Co. The structure will be two stories, 98x104 ft.

Architect Harry Marshal has completed plans for the construction of a fifty-car garage to be erected on Ormsbee Avenue.

Edward J. Sullivan, 528 Hospital Trust Building, Providence, has been awarded the contract to install heating and ventilating systems in the addition to the state prison at Cranston, R. I. The contract amounts to $5,860.

Joseph Appleton, 1827 Westminster Street, Providence, has the contract for remodeling the plumbing in the residence of Prescott Knight on Elmwood Avenue, and in the Washington Street home for Leo Logan.

The Pawtuxet Athletic Club has had plans prepared for the construction of a new home on Aborn Street. The structure will be 43x33 ft., and cost about $18,000.

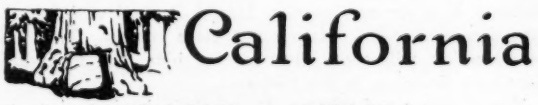
Architect Ambrose J. Murphy has prepared plans for the construction of a rectory for St. Catherine's Church, Apponaug, R. I. The structure will be two stories high and contain 12 rooms.

William G. Heath & Co., 60 Friendship Street, Providence, have the contract for installing heating in the home of Senator Kohler at North Scituate, R. I.

A. C. A. Robinson, 239 Point Street, has the contract to install heating in the home of O. L. Wright, at 118 Broadway, and the home of A. Underwood, at 1821 Eddy Street.

Portland and Vicinity.

Master Plumbers of Portland and vicinity, trustees of the Portland Water District and plumbing inspectors held a conference in Portland to discuss the proposed amendments to the plumbing ordinances relative to installations of range boilers and storage tanks. As a result of the conference, a rough draft of the proposed ordinance was drawn up and at a later meeting will be definitely acted upon. The proposals of the inspectors and trustees were essentially acceptable to the plumbers with a few minor modifications which were readily agreed upon. After the next meeting the ordinance will go before the city government for adoption. Briefly, the ordinance provides that all range boilers and tanks in which hot water shall be confined hereafter and subjected to a pressure of 15 or more pounds, shall be so constructed and installed that it shall not become weakened and dangerous by the temperature of the water contained therein and that it shall be provided with suitable safety devices. Some question as to the safety devices remains to be determined. It also provides that gas and water shall not be turned on until the installation shall be inspected and approved by the plumbing inspectors.



San Francisco and Vicinity.

The old year is closing with all the plumbers busy and in good spirits, and the general feeling is that the new year will witness a continuation of the active building era that has made the last half of 1921 one of the best seasons in the history of the trade.

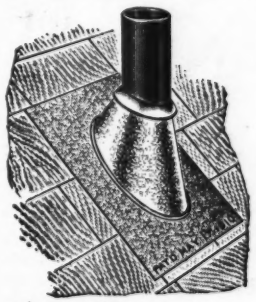
The rainy season has now started in, and some of the big jobs may be interfered with more or less for the next two months; but on the Pacific Coast the winter rains are a big feature in the bringing in of a good year, and nobody is disposed to complain at a little inconvenience in this regard. The rains of this month and the next, if abundant, will mean a lot of additional work in the coming spring and summer not only in San Francisco and the other Bay Cities but throughout the interior of the state as well. While the larger contracting plumbers may be delayed a little in the completion of some jobs by the rains of the last few days, there has come on quite a lot of jobbing work as the direct result of the storm; and as a result some of the plumbers who make a specialty of this sort of work are rushed to the limit.

The Scott Company of this city reports that the year is closing with a good deal of activity and with more business in sight for the early part of the new year. This company has just been awarded the contract for the plumbing and heating of the new Rosenburg office building in Santa Rosa, Calif. This is a five-story store and office building containing one hundred and four offices on the upper floors and seven stores on the ground floor. The plumbing contract amounts to approximately $10,000 and the heating to about $9,000. This company has also secured the contract for the heating of the Keenan apartment house on California Street, near Commonwealth, in this city. The value of this contract is placed at $1,500. This company closed the year with twenty-five men working in San Francisco and a number working on the outside in the smaller towns throughout the state.

"HAAS" Water Closets

are high grade, insuring maximum service and minimum expense.

PHILIP HAAS CO., DAYTON, OHIO



Don't Be Content
With Ordinary Roof Flashings

Specify and Use the Reliable
"SIMPLEX"

Made in
All Lead—Copper—Galvanized Iron

Every Flashing Adjustable
Every Flashing Perfect

Manufactured only by
Simplex Mfg. Company, 313 S. Clinton St., Chicago
Canadian Representative:
W. H. Cunningham & Hill, Ltd., Toronto, Ont.

RAYMOND LEAD WORKS
735 So. Washtenaw Ave.
CHICAGO

Manufacturers
Plumbers Lead Goods

Prompt Deliveries Lowest Prices

Top View "MOR-SEAL"
THE CLEANER CLOSET

Illustrating in a clear distinct manner the complete absence of soiling surface in the "MOR-SEAL" closet.

Note the complete absence of the Soiling Hump on upper trapway also the large water surface.

It is Cleaner.

Ask your Jobber for it.

Made of Castex Whitest Vitreous China.

CHICAGO POTTERY CO.
1924-40 CLYBOURN. AVE. CHICAGO. ILL.

"BRE HYGIENIC" SPRING SEAT

Just the seat for that office building or factory job. It has an adjustable spring tension. A spring shock absorber that takes all jar and strain from the bowl. A stop that keeps the seat from striking fixtures in back and a "BRE HYGIENIC" seat.

Get our special prices for your show room or window display.

No. 250

BRE MFG. CO.

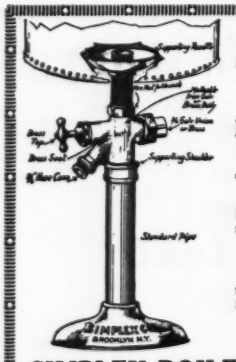
Hyde Park Dist., Boston, Mass.

KEWANEE

The cost of heating water can be reduced to a minimum by using garbage as fuel in a Kewanee Water Heating Garbage Burner.

KEWANEE BOILER COMPANY

Kewanee, Ill.



Simplex Boiler Stand

Made in Malleable Iron or Brass

Stronger, gives larger circulating opening than cast iron stands.

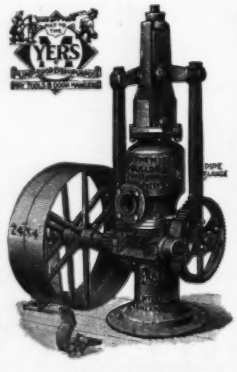
Will carry twenty sizes of boilers. Supporting arms easily attached to all sizes.

Adjustable to any height.

The SIMPLEX costs less in labor, saves leaks—no place for dust or vermin to collect.

Write for Circulars

SIMPLEX BOILER STAND CO. 240 Hall Street Brooklyn, N. Y.



Myers Power Pumps

Great strength and ample lifting power are essentials where water is pumped from deep wells or forced against heavy pressure.

In MYERS BULLDOZER POWER WORKING HEADS—all styles—the power is applied direct to the piston through double pinions, gears and side arms thus insuring great lifting power with a minimum of side motion and strain which reduces wear and breakage.

Simplicity of construction with but few working parts adds to the life of Myers Pumps and makes them exceptionally desirable where severe service is necessary.

Our No. PP20 Catalog shows the entire line of **Myers Power Pumps**—Let us mail you a copy and quote.

The F. E. Myers & Bro. Co.

Ashland, Ohio

Los Angeles.

Construction work will begin early in January on one of the finest playground clubhouses in the city, to be located at the Arroyo Seco playground, Pasadena and Piedmont Avenues. The building will be a two-story structure, with a combination auditorium and gymnasium, director's office, club rooms and kitchen on the first floor. On the lower floor will be a billiard room, bowling alleys, children's play room, rest rooms, shower baths, lavatories and toilets. Hunt and Burns are the architects.

Architect John J. Frauenfelder, Story Building, has prepared plans for a two-story, ten-room residence to be erected on Rossmore Avenue, near Third Street. Plans include three tiled baths and a unit gas heating system. The cost will be about $20,000.

The California Bank will erect a one-story brick bank and store building, 130x153 ft., at Washington and Vermont avenues. The building will contain twelve store rooms and banking rooms.

Architect Alfred F. Priest has been commissioned by the board of education to prepare plans for the following grammar school buildings. The new intermediate building to cost $75,000; Columbus Avenue, four-room building, $14,000; Pacific Avenue, three rooms, brick, $9,000; Verdugo Avenue, two-room hollow tile, $8,000; Doran Street, four-room masonry, $9,000; Colorado Boulevard, two-room, masonry, $8,000.

Plans are completed for the construction of a $70,000 school building on California Street, near Hill Street. The building is to be two stories, 128x74 ft., and of brick construction, and will contain eight class rooms. The board of education will soon advertise for bids. C. F. Skilling, Bradbury Building, is the architect.

The California Lutheran Hospital is having plans prepared for a children's hospital building on Hope Street, south of Pico Street, to be known as the Anita Baldwin Children's Hospital. The structure will cost $20,000.

Architect Ross Montgomery, 622 Story Building, is preparing plans for a two-story ten-room parish house in Eagle Rock for the Dominican Fathers.

Architect E. B. Rust, 527 Black Building has prepared plans and is taking bids for a one-story brick store building, 125x108 ft. at Second Street and Fremont Avenue, for Yanou & Cornbleth. The building is to be divided into nine store rooms, and will cost $25,000.

Architects McNeal, Swansey & H. C. McAfee, 1107 Hibernian Building, are preparing plans and supervising the erection of several resort buildings at Little Bear Lake for the Arrowhead Lake Co. Plans are made for a clubhouse, three cottages and a bachelor's building. A number of larger buildings are to be erected at the lake a little later.

Plans are being prepared for the first five units of a fourteen-unit bungalow court on DeLongpre Avenue, near Sunset Boulevard, for E. D. Young, Jr. Each unit will be two stories and contain eight rooms.

Architects Arthur W. Angel and John C. Smith, 325 Hellman Building, are to prepare plans for a Masonic temple at First and Chicago streets for the Hollenbeck Lodge. The structure will be 116x140 ft., and two stories. The first story will contain stores, social hall, kitchen, and service department. Club room and two lodge rooms will be in second story.

G. C. Sutton was low bidder, at $9,294, and was awarded the plumbing contract on the East First Street School. Thomas A. Arthur was awarded the heating contract at $6,150.

E. W. Crowell was low bidder, at $5,618, for the plumbing in the Custer Avenue School, and Geo. A. Posthumus was low on heating at $2,150.

James G. Grey was low bidder, at $3,557, for additions to heating system at the Hollywood High School.

The new county jail and hall of justice building to be erected at Temple, Buena Vista and New High streets, will be 226x195 ft., and eleven stories. The cost is estimated at $2,500,000. It will accommodate both the city and county jails, police, sheriff and court departments.

Wm. Davidson, chief county mechanical engineer, is completing plans for a group of six infirmary buildings at the county farm near Downey. The buildings are to be of brick or hollow tile construction and will cost $50,000.

The Milwaukee Building Co. is preparing plans for a two-story, store, theater and office building at San Pedro, for the West Coast Theaters Co. The theater will be of concrete construction and seat 1,600 persons. There will be eleven stores of brick construction and seventeen offices.

Other Cities in the State.

The Manhattan Beach Development Company has started work upon the new bath house at the head of the $180,000 concrete pier at Whittier.

Comfort stations are to be built in the Trana baseball diamond at San Pedro.

Bids for the construction of the new two-story Van Nuys Bank Building at Van Nuys will be called for soon. The cost is estimated at $50,000.

J. H. Andrews has been chosen as chairman of a committee to arrange for the erection of a new bath house on the Lowry tract, east of La Jolla.

Long Beach will have a large number of expensive buildings constructed in the near future. Some of these buildings are now well under way, including a twelve-story building to cost $500,000; a two-story theater and office building to cost $100,000; a three-story business building at $100,000; a two-story brick garage and auto salesroom, $25,000; the Southern Pacific ticket office is to be remodeled at a cost of $10,000; H. C. and H. L. Rohrbough are erecting a $60,000 two-story market building, and the new unit to Temple school will be built at a cost of $60,000.

A building for the new First National Bank of Sawtelle will be erected on Santa Monica Boulevard, Sawtelle.

Washington

Seattle.

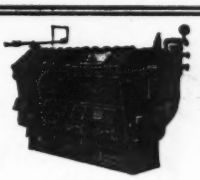
Construction work by the Seattle School Board, definitely assured for next year, will entail an expenditure of $975,000. The chief project is the erection of the Garfield High School at a cost of $600,000. The structure will be of brick, fireproof throughout. An addition to the Ravenna School will cost $125,000, and the new Columbia School on Ferdinand Street and 37th Avenue South will cost $150,000.

The $7,000,000 figure referred to does not include the proposed construction of three apartment houses, costing $100,000 each, which are planned for early beginning.

According to a report furnished by the Seattle Real Estate Association to John M. Gries, chief of the division of building and housing, Department of Commerce, 1,684 new homes were built in Seattle during the last six months, and 627 are now under construction. The figures are considered highly gratifying by the local builders, and it is believed that the number will be greatly augmented in the spring months of 1922.

The Ice Delivery Company, 115 Blanchard Street, has rejected bids for its new building, and announced that new figures will not be taken until after the first of the year, when bids will be asked for a structure about twice the capacity of the one first planned.

The Public Market & Department Stores Company, Frank S. Goodwin, manager, has completed revised plans for the

ECONOMY  EFFICIENCY

This is a
Pierce Down Draft, Magazine Feed, Smoke Consuming, Heating Boiler
Saves Fuel Labor
Manufactured only by
Pierce, Butler & Pierce Manufacturing Corp.
Brooklyn NEW YORK Philadelphia
Boston Baltimore
Worcester Detroit Syracuse Newark Washington

Easily Cleaned

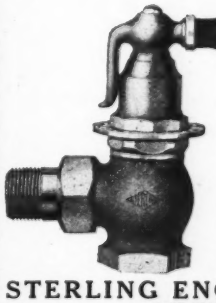
The APEX Closet Bowl has special features that place it in a class by itself.

Clean-out device located at head of trap. Any obstruction can be located and removed in five minutes without disconnecting from floor or water. **Cannot overflow.** Silent in operation.

Find out all about the APEX before installing another closet bowl. Write

THE APEX SUPPLY CO. INC. 203 E. STATE ST. TRENTON, N. J.

STERLING SYSTEM



Sterling Radiator Valve

PACKLESS
QUICK OPENING
DURABLE
Neat in Appearance
Made with Wheel Handle if desired

We also manufacture
Return Traps, Air Line Valves, Thermostatic Radiator Traps, Air Eliminators, Damper Regulators, Strainers

STERLING ENGINEERING COMPANY
MILWAUKEE, WISCONSIN

Insurance
Against Flooded Basements

Where the Signet Drain is installed there can be no back water.

A perfectly reliable trap that automatically keeps out sewerage, gas and germs.

Pat. Dec. 8, 1914

Write for details

TRADE MARK SIGNET REG. U.S. PAT. OFF.

Always works. Nothing to get out of order. Brass working parts submerged.

The Signet is clean, sanitary, simple, durable and efficient.

CRAMPTON-FARLEY BRASS CO.
KANSAS CITY, MO.

"QUIK-OPE"

Bibbs, Bath and Basin Cocks stand the test of Service. It is built into them.

MANUFACTURED BY

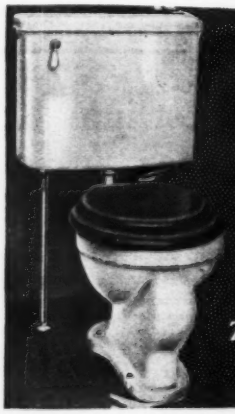
THE HAYDENVILLE COMPANY

HAYDENVILLE, MASS.

FOR lasting quality and true capacity use "Koven" Pure Iron Double Row Riveted, Galvanized Range Boilers, or Naco Galvanized Range Boilers made of open hearth steel. These boilers may be bought of jobbers everywhere.

L. O. KOVEN & BRO.

154 Ogden Ave.. - - Jersey City, N. J.

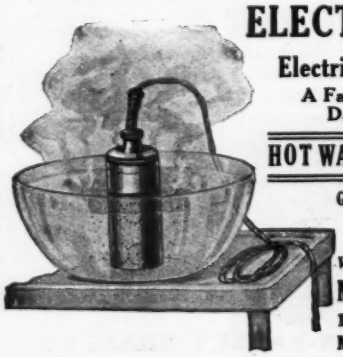


ZECO

A vitreous china tank with a set of real fittings

ZWERMANN COMPANY

Robinson, Illinois



ELECTRO-BOIL

Electric Water Heater

A Faithful Servant, Day or Night.

HOT WATER INSTANTLY

Guaranteed never to burn out.

A profitable line for the dealer.

Write for particulars.

Milwaukee Mfg. Co.

1316 Fond du Lac Ave.

MILWAUKEE, WIS.

proposed new market building to be erected on the west side of Western Avenue north of the present Pike Place market. New plans call for a masonry building, three stories and basement in height, 100x50 ft. in size. Commodious waiting rooms for both men and women will be provided, with modern plumbing and heating facilities. The new building will cost $50,000 and construction work will proceed immediately.

Henry Bittman, architect and engineer, Securities Building, is preparing plans for the proposed business block to be built on Second Avenue, between Pike and Pine streets, by William Grimshaw. The structure will cost approximately $100,000 and will provide a two or three-story building, with foundations for a 7-story structure.

Edwin J. Ivey, architect, Pacific Block, is completing plans for two high class residences at Laurelhurst, representing an expenditure of about $30,000. One structure will contain 8 rooms and the other 9 rooms, with elaborate plumbing and heating facilities. Bids for the general and subcontracts will be called for within two weeks.

General contract for the new Green Lake Masonic Lodge building to cost $25,000, has been let to Jenkins & Kaufman, contractors, Hinckley Building. The structure will be two stories high, 90x56 ft., with stores on the lower floor. Contracts for the installation of heating and plumbing have not been awarded.

Plans for the proposed new Salvation Army Temple to be erected at 1619 Terry Avenue, at a cost of $20,000, have been completed by Architect Earl A. Roberts, Burke Building, who will call for general and sub-bids for the work. The structure will be two stories high, 55x53 ft., and will contain a heating plant. Special attention will be given to the plumbing facilities.

Other Cities in the State.

Bergh-Griggs Co., of Tacoma, has secured the contract for plumbing, heating and other mechanical work in the new buildings to be erected by the United States Public Health Service at Fort Walla Walla, near Walla Walla, on its lumb bid of $121,375. Other bids submitted were: Sutherlin & Co., Walla Walla, $136,076; Eckart Plumbing & Heating Co., Seattle, $139,889; Finnegan-Williams Co., Portland, $157,945. This is one of the largest plumbing and heating contracts awarded in the Northwest for many months, and the number of contractors submitting bids was surprisingly small.

Maurice Thompson, state adjutant general, Washington National Guards, Spokane, will call for bids shortly for the construction of a new addition to the Spokane armory, and work will start early in the new year.

Construction of a seven-story, brick, fireproof garage, to cost $250,000, will be started immediately upon completion of the incorporation of the Z Garage Company of Spokane, according to M. D. East, president of the concern. The company will be incorporated with a capital stock amounting to $1,000,000.

At an early school election, in Wenatchee, a bond issue of $140,000 to provide funds for the construction of additions to the Wenatchee High School and the Lincoln school, will be voted upon. Twenty-two additional rooms will be provided.

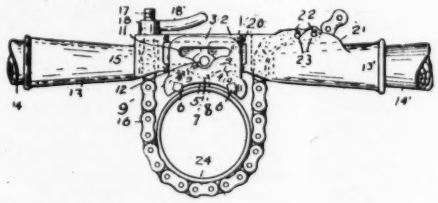
Residence construction in Spokane furnished the greater part of the building activity for November, more permits for new homes being issued last month than for a similar period in many years. Homes valued at $63,300 were undertaken, and the total permit valuation for the month reached the sum of $118,205.

Architects Hill, Mock & Griffen, Tacoma, have completed plans for the new synagogue for the Temple Beth-Israel, which will be erected at North 4th and J streets at a cost of $25,000. The building will be two stories high, 40x80 ft., and bids for general and sub-contracts will be called for within 10 days.

Patents

Heating Department.

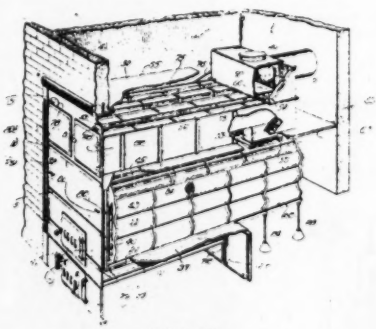
1,400,398. Chain Wrench. Clyde S. Wright, Toledo, Ohio, assignor to The National Supply Company, Toledo, Ohio, a corporation of Ohio. In a wrench, a jaw having its gripping face provided with a toothed portion at both sides of its transverse center, an operating member loosely seated on the face of the jaw opposite the toothed face, and having a fulcrum on the first face between each toothed face and



1,400,398.

the said transverse center, and a flexible gripping member adapted to have its ends attached to the operating member and to grip an object in contact with the gripping face of the jaw.

1,399,756. Air-Heater. Earl J. Ellison, Maywood, Ill., assignor to Ellison Engineering & Furnace Co., Chicago, Ill., a corporation of Illinois. In a heater, the combination with a combustion chamber of a radiating section mounted above the combustion chamber, the rear wall of the heater being spaced from the rear wall of the combustion cham-



1,399,756.

ber, means for admitting air to be heated into the space between said walls, a baffle plate between the combustion chamber and the radiator section for causing horizontal forward flow of air along the combustion chamber and a second baffle plate above the radiator section for causing horizontal flow of air in a reversed direction along the radiator section.

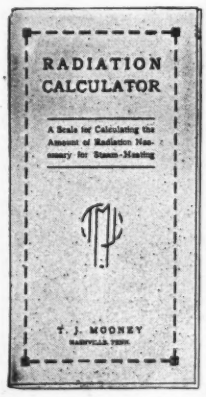
1,399,815. Automatic Draft Control for Heating Apparatus. Harry E. Spears, Baltimore, Md. As a unitary article of merchandise, the draft-controlling attachment for furnaces, comprising a post, a pulley thereon, a normally detained lever mounted on said post and having one end extending over said pulley, time-controlled mechanism secured on said post and including means to release said lever, downwardly pulling means under said end of the lever and connectible thereto for holding the downwardly pulling means against operation, means secured on the post for hold-

Gerstein
Cistern and Riveted Pressure Boilers
can be described in one word—
Everlasting

They not only *last* but give continuous, satisfactory service.
Made in any size, pressure or capacity desired.

Write for details

Gerstein Bros. & Cooper
Coppersmiths
1-3 W. Third Street So. Boston, Mass.



HOW DO YOU FIGURE RADIATION?

With a MOONEY RADIATION CALCULATOR, you can figure the exact amount of radiation necessary for any size room or building, whether steam, hot water, or vapor heat is being used, and do it quicker than by any thumb rule. All on one chart—easily understood. Gives exact amount required. Has been in use for ten years and not one job figured by it has had to be changed.
Send us your name and address, and we will mail you one. Try it, then if you want to keep it, send us $1.25 after five days. We know you will want to keep it.

T. J. MOONEY
NASHVILLE, TENN.

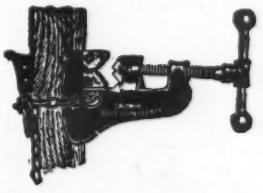
CROWN

Post Pipe Vise
Holds Tight and Firm Anywhere

Can be attached to any wood or iron, round or square post, pole or tree.

Jaws of best tool steel, hardened and drawn. Will not crush or allow pipe to slip. Made in two sizes.

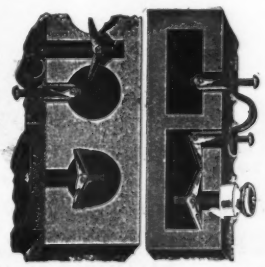
Write for particulars and catalog.



Ask your jobber for "Crown" Post Vises, Pipe Dies, Pipe Cutters, Etc.

CROWN DIE & TOOL CO., 555 W. Monroe St., Chicago

PAINE TOGGLE BOLTS
"The Practical Toggle"



Save their cost in time and patience

THE PAINE CO.
1742 Van Buren St.
CHICAGO

Work instantly in any position in any hollow material.

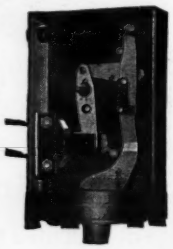
TYPE "R" PENN PRESSURE SWITCH

Makes Any Good Electric House Pump Better

The manufacturer of water supply systems should be sure that the switches he uses will stand up and do justice to his product.

The Type "R" Penn Switch meets every requirement of service and durability. Has special fabric diaphragm, monel metal pins, bakelite insulation, hardened steel wearing parts, brass guide and oil tempered springs.

Minimize your pump troubles. See that the pumps you install are equipped with Penn Switches.



Manufactured by

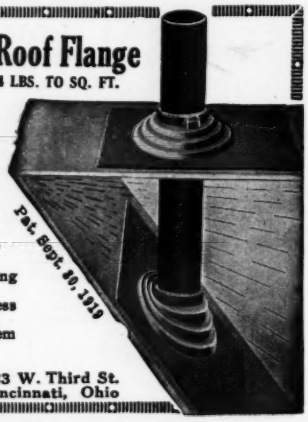
Penn Electric Machine Co.

114 Eighth St. Des Moines, Ia.

Retlaw Telescopic Roof Flange

A ONE-PIECE LEAD FLANGE, 4 LBS. TO SQ. FT.

Drawn into circular corrugations.
Extremely pliable—no seam.
Allows for settling of roof or pipe.
Adjustable to any angle.
Allows for contraction and expansion.
Collapse one side—draw out other.
Draw up band, compressing lead around pipe.
On like a flash—costs less than hand made.
Ask your jobber about them or write us for particulars.



The Harker Mfg. Co. 123 W. Third St. Cincinnati, Ohio

THE INCOMPARABLE

NIEDECKEN MIXER

PATENTED

Write for Bulletin D. 10X

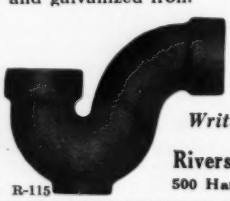
HOFFMANN & BILLINGS MFG. CO.
MANUFACTURERS SINCE 1855
MILWAUKEE, U. S. A.

RIVERSIDE Cast Iron Sink Traps

Furnished plain, painted or galvanized.

Female inlet and outlet.

We make a wide line of plumber's supplies in plain and galvanized iron.



Both styles are furnished threaded for either 1½-in. or 2-in. iron pipe.

Write for Catalog 9

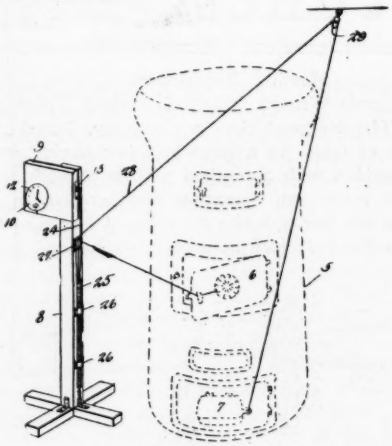
R-116

R-115

Riverside Foundry & Galvanizing Co.

500 Harrison St., KALAMAZOO, MICH.

ing the downwardly pulling means in contiguity with the post while permitting vertical movement of the pulling means and guiding it in such movement, and a haul-line secured to said downwardly pulling means and attachable

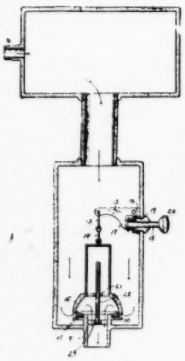


1,399,815.

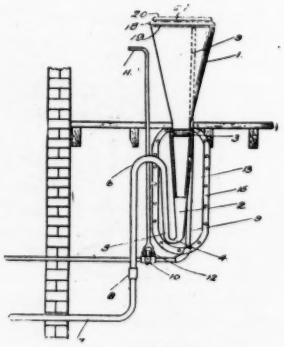
to a furnace-door, said haul-line being co-operative with said pulley and other guiding means for controlling said furnace-door, substantially as shown.

Plumbing Department.

1,400,222. Flush for Water-Closets. Edward Levine, New Haven, Conn. A flush for water-closets comprising a valve-chamber provided at its lower end with an outlet, a valve adapted to close said outlet, a vertically-arranged pin mounted in the outlet adapted to guide the said valve to its seat, means including a push-pin for lifting said valve, a header connected with said valve-chamber and adapted to be coupled with a water supply pipe.



1,400,222



1,399,927.

1,399,927. Toilet. David S. Buck, Pueblo, Colo. In apparatus of the character described, a bowl, a substantially vertical trap member connected with the lower end of the bowl, a gooseneck connected with the lower end of the trap member, a two part heat insulating drum inclosing the trap member and the inner arm of the gooseneck, means for detachably securing the parts of the drum together, and means to supply water to the bowl.

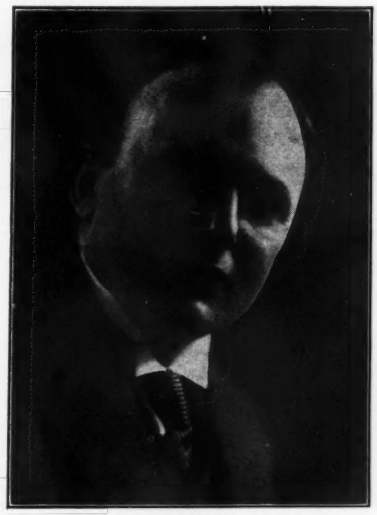
The Chamber of Commerce of the United States in an analysis of export statistics, finds gains in sales abroad of practically every important American commodity. In the first nine months of the year 15 exports showed increases ranging from 43 per cent to 52.10 per cent over corresponding period of 1920, while five others showed declines ranging from 5 per cent to 32 per cent.

American Heater Slogan Contest Results

Awarded by The National Trade Extension Bureau of Evansville, Ind.

"For Hot Water Needs, The American Leads"

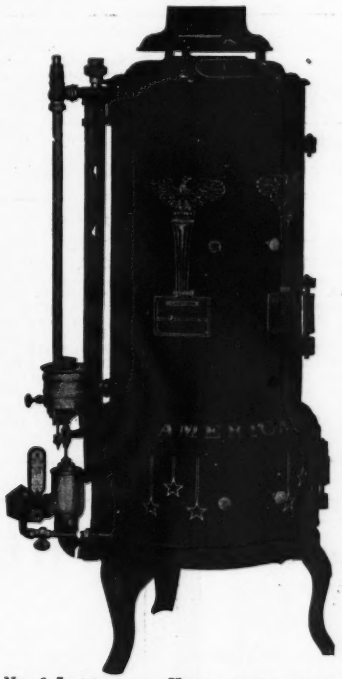
Third Prize to HELEN De J. HERCULES
308 W. Sherman Ave., Peoria, Ill.
Her slogan reads:
"Made to Make Good—American"



First Prize to D. J. COLLINS
4742 McPherson Ave., St. Louis, Mo.
His slogan reads:
"For Hot Water Needs, the American Leads"

Second Prize to L. WALTER MOON
Bradley Co., 3834 Olive St., St. Louis, Mo.
His slogan reads:
"You Will Swear By It—Not At It"

No. 3 Instantaneous Heater, is Mrs. Helen De J. Hercules' selection as third prize.



No. 6 Instantaneous Heater, is the selection of Mr. Collins, winner of the first prize.

No. 200 Storage Heater, is Mr. Moon's selection for second prize.

We thank the many contestants from all parts of our country for their hearty and earnest co-operation and appreciate the many excellent efforts in our behalf, also The National Trade Extension Bureau for their courtesy in determining the contest.

Have you the large four colored wall hanger of the AMERICAN Heater hung up in your place of business? If not, write for one today.

AMERICAN HEATER CORPORATION—1110 N. SIXTH STREET ST. LOUIS, MO.

Classified Advertisements

8 cents for each word including heading and address. Count seven words for keyed address. Minimum $2.00. One inch $4.00. Cash must accompany order. Copy should reach us Tuesday morning.

Situations Open

WANTED—PLUMBING SALESMAN TO sell high class plumbing specialties as a side line on commission basis. Address Twentieth Century Brass Works, Belleville, Ill. 12-31

SALESMEN WANTED—RELIABLE, experienced salesmen of plumbing goods of proven ability wanted in good territories, fine opportunity. References required. Confidential. Cooper Sanitary Mfg. Co., 34th and Chestnut Sts., Philadelphia, Pa. 12-31-1-7

SALES MANAGER.

HIGH CLASS, TO TAKE COMplete charge of sales department. Must be experienced in plumbing supply business. Give reference and full particulars first letter. All communications confidential. The Pfau Mfg. Co., Cincinnati, Ohio. 12-24-31

WANTED—TWO HIGH CLASS SALESmen to travel in Mississippi for a large Plumbing, Heating and Mill Supply House. Must be thoroughly experienced and well qualified. State age, references and salary expected. Address Key 436, "Domestic Engineering," 1900 Prairie Ave., Chicago. 12-10/31

WANTED—EXPERIENCED SUCCESSful salesman who is acquainted with and has sold jobbers of Plumbing Supplies and Steam Goods in New York City territory; also New England territory, either or both. Good opportunity with established well known standard line. What have you to offer? Address 442, "Domestic Engineering," 1900 Prairie Ave., Chicago. 12-10/31

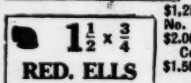
WANTED—PLUMBING SALESMAN to carry plumbing specialty as a side line, on commission basis. Address 400, "Domestic Engineering," 1900 Prairie Ave., Chicago. 10-8

Situations Wanted

SITUATION WANTED—BY MAN with 25 years' experience in the heating, ventilating and plumbing trade as estimator, draftsman or construction superintendent. Have engineering ability. Best of references. Address 460, "Domestic Engineering," 1900 Prairie Ave., Chicago, Ill. 12-31

Miscellaneous

BIN LABEL CARDS
2x4¼ in.
For water gas and steam. Over 10,000 different kinds.



$1.25 per 100—$10.00 per 1000 No. 1 Card Holders 2x4½ in. $2.00 per 100—$17.50 per 1000 Celluloid Covers 2x4¼ in. $1.50 per 100—$12.50 per 1000 Send for samples. Send for free booklets. "How to Systematize the Stock Room and Build Bin Racks. Haddon Bin Label Co., Haddon Heights, N. J.

Are there 5 and 10 cent pieces lying around your shop in the form of PIPE COUPLINGS? If so, pick them up and advise us amount of your accumulation.

JOHN W. MOON

1420 Chestnut St. Philadelphia, Pa.

TIME SHEETS, JOB TICKETS, ESTImating blanks, etc., for plumbers. Small or large lots. Reasonable. Samples and prices free. Prompt service. Louis Fink & Sons, Inc., Laurel Springs, N. J. 7-30 tf

SELL YOUR SURPLUS COUPLINGS and fittings. Write us. The A. & J. Mfg. Co., 557 W. Lake St., Chicago. tf

Government Proposals

TREASURY DEPARTMENT, SUPERvising Architect's Office, Washington, D. C., December 15, 1921.—Sealed proposals will be opened in this office at 3 p. m., January 12, 1922, for new hot water piping, etc., in the United States Mint, Philadelphia, Pa., in accordance with specification and drawing, copies of which may be had at this office or at the office of the Custodian, Philadelphia, Pa., in the discretion of the Supervising Architect. Jas. A. Wetmore, Acting Supervising Architect. 12-24-31

TREASURY DEPARTMENT, SUPERvising Architect's Office, Washington, D. C., Dec. 21, 1921.—Sealed proposals will be opened in this office at 3 p. m., Jan. 18, 1922, for the installation complete of the Mechanical Equipment for the boiler house, four continued treatment buildings, one disturbed patients' cottage, one kitchen and mess hall building, the connections to present building and certain outside services, at the United States Public Health Service Hospital No. 62, at Augusta, Georgia, in accordance with the drawings and specification, copies of which may be had at this office or at the office of the Superintendent, at Augusta, Ga., in the discretion of the Supervising Architect, Jas. A. Wetmore, Acting Supervising Architect. 12-31

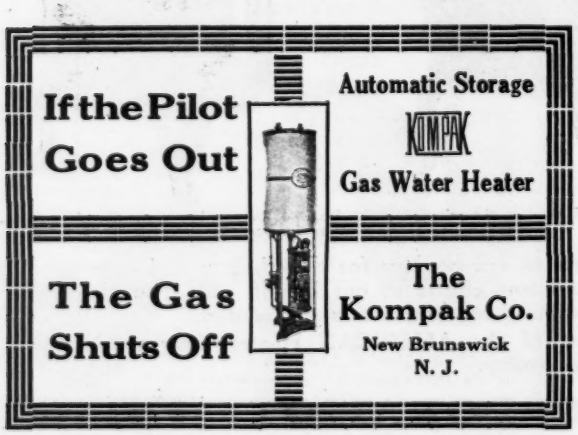
Books for Your Trade Library

PRINCIPLES AND PRACTICE OF COST ACCOUNTING. By F. H. Baugh. Presents a modern method of accounting for the plumber and steamfitter. A text and form book for those who would become expert in keeping track of selling costs, overhead expense, depreciation, administrative expense, etc. Illustrated by numerous forms. Size 6x9 in. 194 pages. Half leather. Price, $3.00.

NOTES ON HEATING AND VENTILATION. By Prof. John R. Allen. A text book on the known methods of heating and ventilation, covering warm air, steam, hot water and vapor, and approved methods of ventilation. Among the subjects covered are rules for figuring heat loss, direct and indirect systems, warm air furnaces, fan blast and air-mixing systems, auxiliary devices for heat control. Illustrations are especially numerous and well made. Size 6x9 in. 228 pages. Cloth. Price, 2.50.

PRACTICAL STEAM AND HOT WATER HEATING AND VENTILATING. By Alfred G. King. This book should be in every steamfitter's library. A strictly up-to-date work, describing various systems of heating and ventilation. Besides the technical features, it contains hints on securing contracts, business methods, shop practice, rules and data for estimating radiation and figuring costs, and other tables and suggestions that are time savers. Size 6x9 in. 368 pages, 300 detailed illustrations. Cloth. Price, $3.50.

Domestic Engineering
1900 Prairie Avenue, Chicago



WHEN YOU MOVE

NOTIFY US

The post office is not required to forward second-class matter. To avoid missing an issue of DOMESTIC ENGINEERING when you change your address, fill out and mail this blank to us.

Name.....

Old Address.....

.....

New Address.....

.....

Vol. 14 No. 5

OHIO STATE UNIVERSITY
DEC
LIBRARY
TD1*
D66
v57

DOMESTIC ENGINEERING

The Plumbing and Heating Weekly

GUARANTEED MADE OF THE BEST MATERIAL AND TESTED
Electric Weld
TRADE MARK REGISTERED
150 LBS. WORKING PRESSURE - EXTRA HEAVY

John Wood Mfg. Co.
Conshohocken, Pa.

EVERY ELECTRIC WELD BOILER IS CAREFULLY TESTED

Better raw materials, more care, careful testing, is producing a BETTER Electric Weld boiler than pre-war.

Have You Used Any Lately?

Eliminate ALL the rivets and you eliminate the leaks. This is the Electric Weld principle.

Chicago December 24, 1921 New York

KEWANEE

You can get at 'em

Big manholes, properly located, and plenty of handholes make it possible to get at any part of a Kewanee Boiler ***easily***. So it is an easy matter to keep a Kewanee clean and free from soot and lime which are enemies of economical operation.

A little thing 'tis true. But it means much to the man who pays for the coal.

KEWANEE BOILER COMPANY
KEWANEE, ILLINOIS

Steel Heating Boilers, Radiators, Tanks, Water Heating Garbage Burners

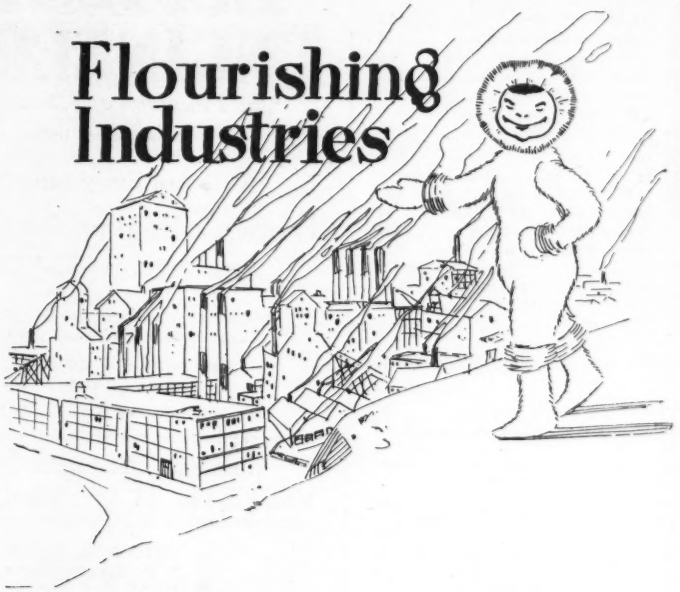
BRANCHES:

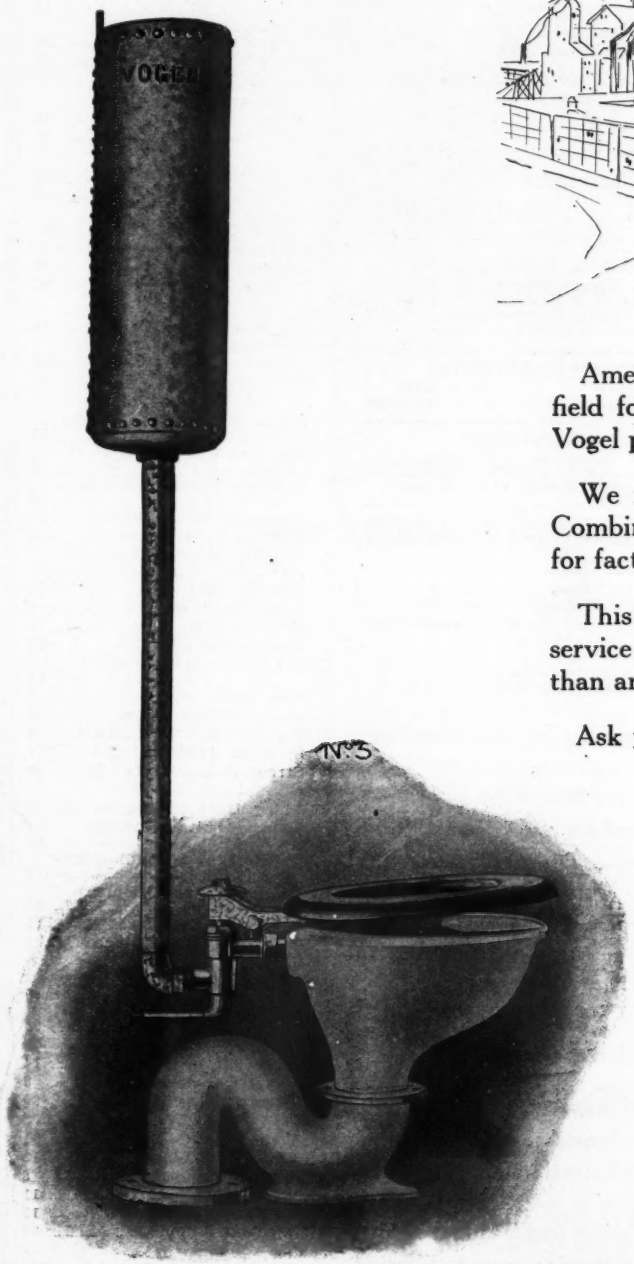
CHICAGO	Market and Washington Sts.	SALT LAKE CITY	Scott Bldg.
NEW YORK	47 W. 42nd St.	MILWAUKEE	Mer. & Mfrs. Bank Bldg.
DES MOINES	315 Hubbell Bldg.	PITTSBURGH	945 Oliver Bldg.
KANSAS CITY	2014 Wyandotte St.	DALLAS	Southwestern Life Bldg.
INDIANAPOLIS	509 Occidental Bldg.	DETROIT	1772 Lafayette Boul.
ST. LOUIS	1212 Chemical Bldg.	TOLEDO	1121 Nicholas Bldg.
MINNEAPOLIS	708 Builders Exchange	CLEVELAND	706 Rose Bldg.
COLUMBUS, O.	808 1st Natl. Bank Bldg.	ATLANTA, GA.	1524-25 Candler Bldg.
		SAN FRANCISCO,	72 Fremont St.

CANADIAN REPRESENTATIVES—The Dominion Radiator Co., Ltd.
Toronto, Ont., Montreal, Que., Winnipeg, Man., Hamilton, Ont., St. John, N. B., Calgary, Alta.

MEMBERS
THE NATIONAL
TRADE EXTENSION BUREAU
OF THE
PLUMBING AND HEATING INDUSTRY.
PERMIT Nº 39 REGISTERED

Flourishing Industries





America's industrial plants provide a rich field for the Plumber who is armed with the Vogel proposition.

We manufacture the famous No. 5 Closet Combination which was designed primarily for factory installation.

This closet will stand the hardest kind of service and is more economical of water than any other like closet on the market.

Ask your jobber.

Jovo—

Get Vogels from your jobber

JOS. A. VOGEL CO.
WILMINGTON, DELAWARE
ST. LOUIS, MO.

VOGEL PATENTED

Abendroth Bros. 13
Acme Brass Works.....652
American Heater Corp.....661
Apex Supply Co., Inc.....657
Armstrong Mfg. Co..... 79
Art Metal Radiator Cover Co. 81

B. & B. Tool & Machine Works 654
Baker Mfg. Co., S. D..... 81
Bareham & Saunders 651
Barrett Mfg. Co., Jas.....652
Beaton & Cadwell Mfg. Co. 79
Beaton & Corbin Mfg. Co..... 87
Blake Specialty Co.....647
Borden Co. .....Back Cover
BRE Mfg. Co.....656
Bullard Specialty Co.....652

Capitol Brass Works..... 93
Central Foundry Company, The 13
Chamberlain Co. 654
Chicago Faucet Co..... 15
Chicago Pottery Co.....655
Clayton & Lambert Mfg. Co. 82
Crampton-Farley Brass Co.657
Crane Co....Inside Front Cover
Crown Die & Tool Co.....659

Detroit Brass & Malleable Works 10
Dole Valve Co. 82
Domestic Engineering Directory..Inside Back Cover
Detroit Range Boiler & Steel Barrel Co..... 16

Eagle-Picher Lead Co..... 77
Economy Pumping Machine Co. 81
Estabrook's Sons, R..... 78

Fretz, Jr., & Co., S. S. .....638 and 639
Frost Mfg. Co.....648

Gerard Mfg. Co.....650
Gerstein Bros & Cooper...659
Gorton & Lidgerwood Co..... 87

Haas Co., Philip.....655
Haines, Jones & Cadbury Co. 13
Hamburg Boiler Works.....654
Harker Mfg. Co.....660
Hause Mfg. Co., Chas. F.....650
Haydenville Co., The.....658
Healy-Ruff Co. 77
Hoffmann & Billings Mfg. Co. 660
Hoffman Heater Co..... 85
Hotstream Heater Co..... 78
Hudson Brass Works.....652
Humphrey Co..... 7

Illinois Engineering Co..... 87

Jenkins Bros. 83
Johnson Co., J. D..... 13
Johnson Service Co.....647

Kemp Mfg. Co., C. M..... 83
Kennedy Valve Mfg. Co.....653
Kewanee Boiler Co.....656
Koeneke Bros. Co..... 93
Kompak Co., The.....662

Koven & Bro., L. O.....658
Krupp Foundry Co..... 13

Lytton Mfg. Corp.....649

Magee Steam Specialty Corp. 78
Marsh Valve Co..... 81
Milwaukee Mfg. Co.....658
Mooney, T. J.....659
Morency-Van Buren Mfg. Co. 650
Myers & Bro. Co., F. E.....656

National Fdy. Co. of N. Y., Inc. 13
National Plumbing & Heating Supply Co..... 82
Never Split Seat Co..... 91

Ofeldt Gas Fired Boiler Co., Inc..... 78
Ohio Brass Co., The..... 82

Paine Co., The.....659
Penn Electric Machine Co..660
Pierce, Butler & Pierce Mfg. Corp.....657
Polygon Products Co..... 90
Porcela-Radax Co. 80
Powers Regulator Co..... 87

Raymond Lead Works.....655
Riverside Fdy. & Galvanizing Co. 660
Rudolph, Alfred J..... 83

Salem Brass & Iron Mfg. Co. 13
Sanitary Co. of America.... .....654 and 13
Sanitary Earthenware Specialty Co. 6
Sherwood Brass Works..... 90
Simplex Boiler Stand Co.....656
Simplex Heating Specialty Co., Inc. 89
Simplex Mfg. Co.....655
Sloan Valve Co.....Front Cover
Smith Co., H. B..... 17
Smooth-On Mfg. Co.....653
Somerville Iron Works..... .....77 and 13
Speakman Co. 5
Standard Iron Wks., Inc.....650
Standard Sanitary Mfg. Co. 9
Sterling Engineering Co.....657
Street & Kent Mfg. Co..... 89

Tidey Heat Specialties Co. 88
Tillery's Little Janitor Clock Co. 92
Toledo Pipe Threading Machine Co. 18
Trageser Steam Copper Works John..... 80
Trane Co., The..... 77
Trenton Brass & Mach. Co. 83

United Cement Products Co. 80
United States Sanitary Mfg. Co. 94

Vaile-Kimes Co..... 14
Vogel Co., Jos. A..... 3
Vulcan Brass Mfg. Co..... 80

Weis Mfg. Co., Henry..... 91
Weiskittel & Son Co., A..... 13
Wise Inc., J. B..... 8
Wolff Mfg. Co..... 11
Wolverine Brass Works..... 12
Wyckoff & Son Co., A..... 88

Zwermann Co. 658

DOMESTIC ENGINEERING
The Plumbing and Heating Weekly
Established 1889.

Published Every Saturday by

Domestic Engineering Company

1900 Prairie Avenue, Chicago

Address all Correspondence to Chicago Office
Long Distance Telephone: Calumet 4680

New York Office, 200 Fifth Avenue
Telephone Gramercy 4419

Cleveland Office, 4300 Euclid Avenue

Chicago, December 31, 1921
Vol. 97, No. 14 Whole No. 1516

EDITORIAL STAFF
F. P. Keeney, Editor
R. Herlov, H. P. Tebmansen,
Edwin L. Barker, H. W. Allen,
Associate Editors

ADVERTISING REPRESENTATIVES
E. DeForest Winslow F. S. King
O. T. Carson R. Payne Wettstein E. G. Hutchison

TERMS OF SUBSCRIPTION
United States and Possessions, $2.00 per year.
Current Copies, 10c each. Back numbers, 25c each.
Canada, $3.00 per year. Foreign, $4.00 per year.

Entered as Second Class Matter on February 20, 1893, at the Post Office at Chicago, Illinois, Under the Act of March 3, 1879.

Member of Audit Bureau of Circulations.
Member of Associated Business Papers, Inc.

Leading Articles in This Issue

Installing Plumbing on the Part-Payment Plan.

A Super-Sanitary Swimming Pool.

Kinks for Plumbers and Steam Fitters.

Successful Sewage Disposal Systems for Farm and Rural Homes and Schools.

The Heating of Greenhouses.

The Bath a Day Movement Grows.

What It Costs to Do Business.

Special Departments.

Questions and Answers.

What Associations Are Doing.

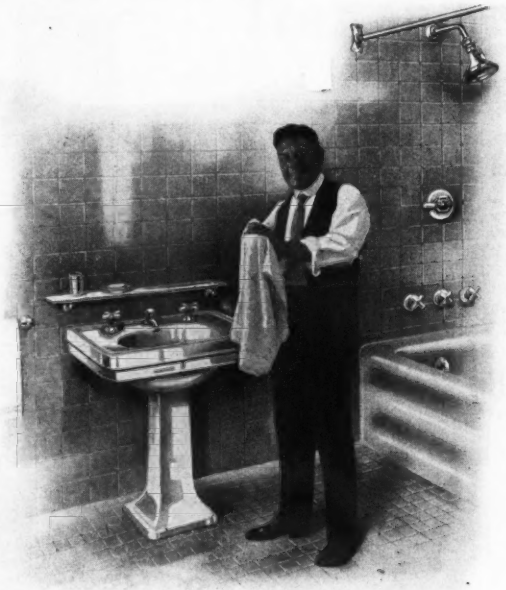
Among the Wholesalers and Manufacturers.

The Metal Market and Trade Reports.

Among the Plumbing and Heating Contractors.

Plumbing and Heating Patents.

Wash and Bathe in Running Water



Even to Escutcheons— Speakman Showers and Fixtures Are Always Uniform

Take for instance the Unit-Acto Fixture which has the *one outlet* feature that pleased this fellow so well. It fits stock lavatories; so does the Unit Fixture which is used when a standing waste is wanted.

The escutcheons of these are similar in design to those on the three handles of the Deshler Fixture shown over the tub.

The H-952½ Mixometer Shower that you see connects up integral with the by-pass valves of the Deshler Bath Fixture and saves six fittings, eight nipples and sixteen threads and chances of leak in the installation. Note also that the Mixometer escutcheon is similar to the others. All these escutcheons, by the way, are the best of bone china and will not craze, crack or chip.

We have folders illustrating the showers and fixtures shown here. We also have them on various types of showers. We'll imprint some with your name if you wish. Also we will send you a supply of "A Shower Over Every Bath Tub" stickers.

Speakman Company

Wilmington **Delaware**

SPEAKMAN A Shower over every bath tub **SHOWERS**

THE SANITARY EARTHENWARE SPECIALTY CO.
TRADE
SESCO
MARK
MANUFACTURERS OF
HIGH GRADE
VITREOUS CHINA
SPECIALTIES
TRENTON, N.J.
COLUMBUS, O.
THIS is a high-class and valuable piece of Vitreous chinaware, and should be handled as such. This piece of pottery has been classified as "best quality" after a thorough inspection by competent and experienced men. The term "best quality" does not mean that this article is without defect. It is impossible to make large pieces of ware without flaws of some kind, and these minor defects have not been overlooked in the grading of this article as "best quality."
Copyrighted 1915 by James J. Dale

The Label~ and what it means

The SESCO LABEL represents the highest quality of workmanship, material and design attainable by the most skilled of potters.

It stands for consistent quality.

It is synonymous with lasting satisfaction as only sanitary ware of this kind can induce.

The SESCO LABEL is put on the WHITEST SANITARY WARE ON THE MARKET—Vitreous China Sanitary Specialties that harmonize most completely with modern bathroom equipment.

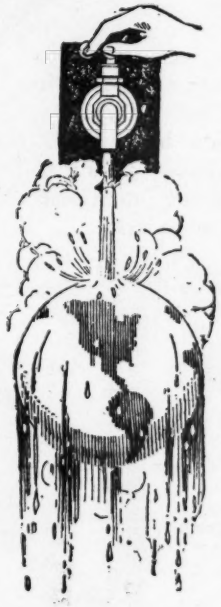
If you insist on Sanitary Earthenware Specialties bearing this label you will be insured for all time, against unprofitable come-backs.

Made by the first patentees of heavy Vitreous China Ware in America

The Sanitary Earthenware Specialty Co.

GENERAL OFFICES
TRENTON, NEW JERSEY

POTTERIES
TRENTON, N. J.—COLUMBUS, O.



Tens and Tens of Thousands

of

HUMPHREY GUARANTEED Automatic Gas Water Heaters

are satisfactorily supplying Hot Water Service the world over.

There are still millions of homes to be equipped with this Service.

Because the Service rendered by the Humphrey Automatic is so dependable—so satisfactory—so perfect,—and

Because they sell so readily everywhere,—and

Because there is an attractive profit to you in the sale of this product,—and

Because Profit, and Satisfaction to your customers are your only excuses for being in business—

Doesn't it fall upon your shoulders individually to install just as many of them as you possibly can?

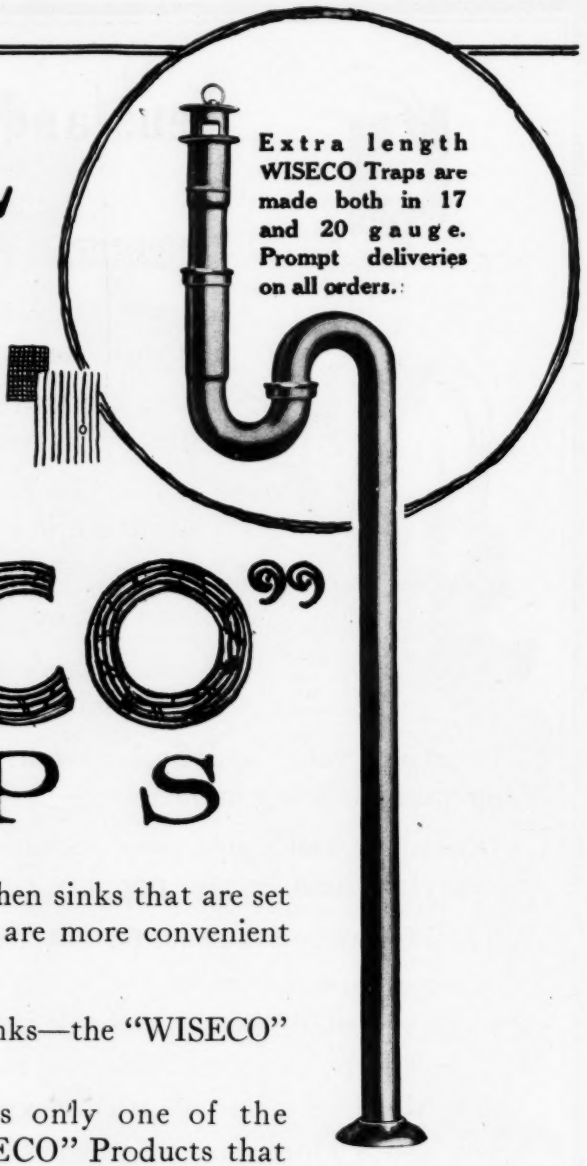
The Humphrey Automatic is not a make-shift,—it is not an experiment,—it is not a "flivver contraption" made just to sell. It is a staple article—backed by years and years of successful operation—backed, if you please, by experience. When you sell a Humphrey it stays sold, and delivers dependably the sort of Hot Water Service people want and enjoy—constant Hot Water abundance.

All this with reasonable gas bills.

Get the Humphrey selling habit. You and your whole community will profit by it.

HUMPHREY COMPANY
Div. Ruud Mfg. Co.
KALAMAZOO MICHIGAN

Extra Length-



Extra length WISECO Traps are made both in 17 and 20 gauge. Prompt deliveries on all orders.

"WISECO" TRAPS

HOUSEWIVES generally like kitchen sinks that are set 36 inches from the floor—they are more convenient and a great deal more comfortable.

We have designed a trap for these sinks—the "WISECO" Extra-length Trap.

Our idea of business is expressed in the following verse by Tom Dreier of Boston. This will still be our idea for 1922 and always.

Business is business, but men are men,
Working, loving and dreaming;
Toiling with hammers, brush and pen,
Roistering, planning, scheming.

Business is business, but he's a fool
Whose business has grown to smother
His faith in men and the Golden Rule,
His love for friend and brother.

Business is business, but life is life,
So we're all in the game to win it.
Let's rest sometimes from the heat and strife
And try to be friends a minute.

Let's seek to be comrades now and then
And slip from our golden tether.
Business is business, but men are men,
And we're all good friends together.

This is only one of the "WISECO" Products that are up to the recent improvements in Plumbing Practices.

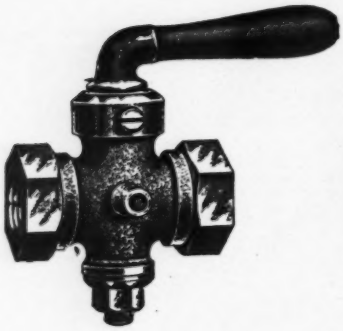
"WISECO" Deliveries are up to the minute, also, and this promptness enables you to get on the job before the other fellows have even started. Want any more details?

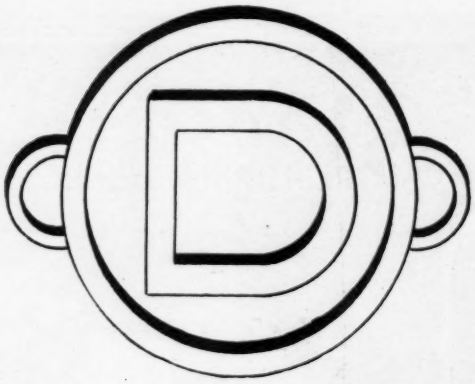
There are more details—

- WISECO - TRADE MARK - EST. 1877 - INC. 1912 - J.B. INC.

J. B. WISE, Inc., Watertown, N.Y.

"Standard"
PLUMBING FIXTURES
Standard Sanitary Mfg. Co. Pittsburgh





"Detroit" Cast Iron Flange Union

With Metal Gasket

Specially designed so it cannot blow out. For use where a tight joint is required. Recommended for Air, Steam and Superheated Steam.

The Detroit Cast Iron Flange Union is made in all sizes from ½ inch to 6 inch, inclusive, black or galvanized. The diameter of Flange, number of bolt holes, etc., correspond with the dimensions of the common cast iron flange union.

COSTS NO MORE THAN the common flange union

Why not buy this Union which would cost less to install and at the same time make a better connection.

The **DEPENDABLE** *Line*

DETROIT BRASS & MALLEABLE WORKS
DETROIT, MICHIGAN

(Formerly)
Detroit Valve and Fittings and Detroit Brass Works
New York Office (Metropolitan District Only)
66 Cliff St., H. Romeyn Smith
Eastern Sales Manager

Southern Representative (Texas and Oklahoma)
C. M. Crookshank
915 Great Southern Life Bldg., Dallas, Texas

Look for This Seal

IT goes on every piece of Wolff "First Grade Enamelware" that leaves our plant. It certifies not only that our Inspection Department has passed the finished piece as commercially first class in every detail, but also that Wolff inspectors have examined and tested all materials which went into its manufacture.

It stands for the ***utmost*** in enamelware, workmanship and construction, and is an assurance of absolute satisfaction. Look for this orange and black seal on every piece of Wolff "First Grade Enamelware" you buy.

WOLFF MANUFACTURING COMPANY
Established 1855
Dallas Omaha St. Louis CHICAGO Hammond Cincinnati Denver

WOLFF

Sanitary Enamelware - Marble - Brass Goods
Range Boilers - Soil Pipe - Potteryware

Wolverine Kantleak Floats

THE Wolverine Kantleak Float has earned its enviable reputation on merit.

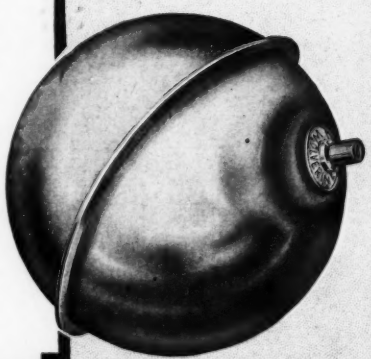
It is made of 10 ounce copper with cast spud that will not and cannot break way from Float. It is absolutely solderless and our construction makes the seam positively inseparable.

Wolverine Kantleak Floats are made with metal reinforcement across the diameter, giving rigidity and additional strength. Two water tight compartments are secured by this arrangement, valuable if through accident or long usage one side should leak.

Wolverine Kantleak Floats are buoyant, strong, lasting and most dependable. The success they have achieved by the years of service they have rendered justifies our claims for their superiority.

Wolverine Kantleak Floats are furnished when Wolverine Ball Cocks are specified complete with Floats. The Kantleak Float and Dale Ball Cock make a combination unbeatable for service and satisfaction.

In self-protection, don't buy just Copper Floats, but secure from us the famous "Kantleak."



Wolverine Brass Works

Manufacturers

GRAND RAPIDS, MICHIGAN

Wolverine Co., Inc.,
New York, N. Y.

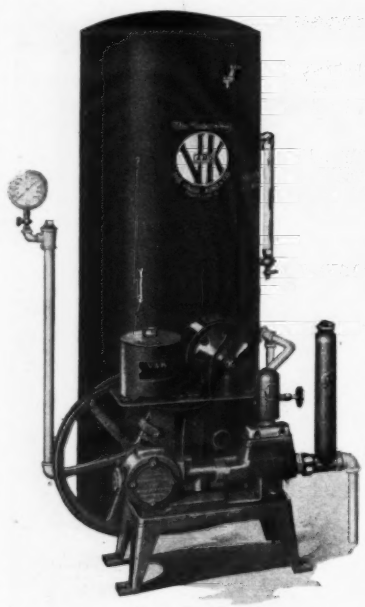
Wolverine Brass Works, Inc.,
San Francisco, Calif.

Specifications and illustrated literature will be mailed upon request by any or all of the following independent and competing makers of Cast Iron Soil Pipe and fittings.

National Fdy. Co. of N. Y., Inc., 10 Sanford St., Brooklyn, N.Y.
Somerville Iron Works.....Somerville, N. J.
A. Weiskittel & Son Co.....Baltimore, Md.
Abendroth Bros.....Port Chester, N. Y.
Sanitary Co. of America.....Linfield, Pa.

The Central Foundry Company.....90 West St., New York
Haines, Jones & Cadbury Co.....1130 Ridge Ave., Phila., Pa.
Salem Brass & Iron Mfg. Co.....Bridgeton, N. J.
J. D. Johnson Co.....Mount Holly, N. J.
Krupp Foundry Co.....Lansdale, Pa.

4002



System 354

Here are the the Three New

"V & K" Specials

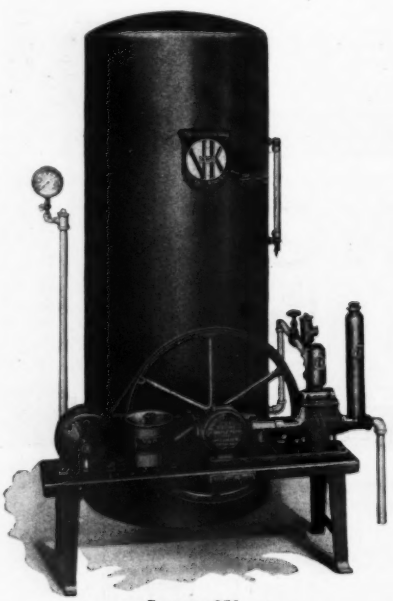
High Quality Products at New Low Prices

Designed to meet the requirements of the modest home-owners who must consider price as well as performance.

You can now offer your clients the quality desired in water supply systems at prices they are willing and able to pay.

LIST PRICES:

System 355	120 gallon pump 42 gallon tank	$142
System 354	120 gallon pump 42 gallon tank	$147
System 356	180 gallon pump 42 gallon tank	$160



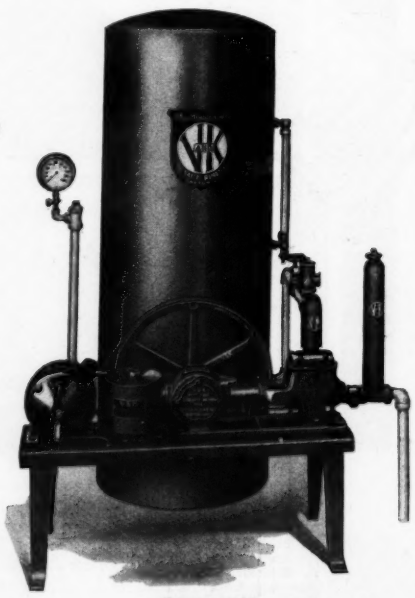
System 356

Write for Particulars

Manufactured by

The Vaile-Kimes Co.

DAYTON, OHIO



System 355

Mother Says:

"The Soap Dish Classic on my kitchen sink is just the handiest thing! I use it oftener and get more benefit and pleasure from it than from any of the many other conveniences I have about the house."

Ask Any Woman If She Wants One

Keep Black Beauty on the Job

Now that we know the scent of battle and the taste of conquest, let's not slow down one bit. Let's increase, rather than decrease, our merchandising effort, now that Christmas is past.

The first tackle is always the hardest in a football game; the first wallop in a scrap. After the first shock, it's easy.

The card shown above is being mailed this week to those displaying Black Beauty Display Outfits. If you don't get yours promptly, write us. Or, if you haven't got into the game yet and want to, just order a Soap Dish Classic with Display Rack — the Display Rack is FREE.

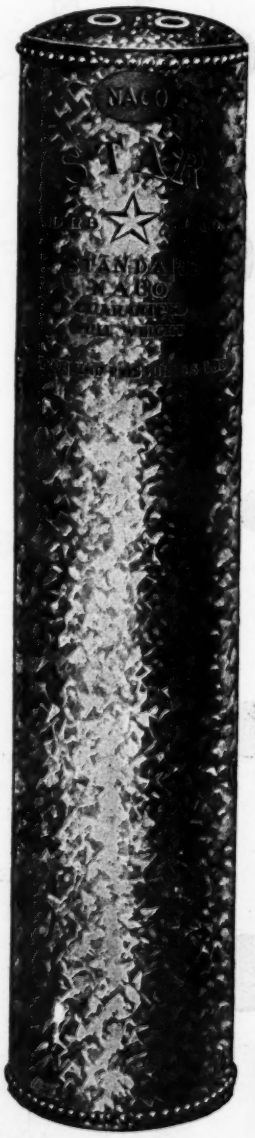
THE CHICAGO FAUCET CO.

2712 North Crawford Avenue — Chicago

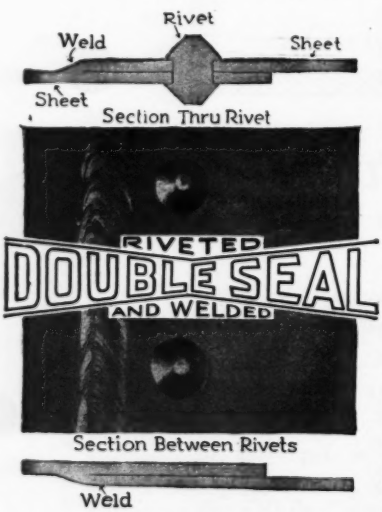
Star Naco Has Sales Features That You Can Talk About

Tell Your Customers About The Six All-Star Features

1. Double seal seam. Riveted and welded. Double protection against leaks.
2. Copper bearing steel. Resists rust and corrosion. Makes every boiler last longer.
3. Riveted side spuds that will not twist out at time of installation.
4. Heavy coat of pure zinc spelter galvanizing put on by hot dip process.
5. Head spuds that prevent accumulation of dross by permitting drainage of spelter at time of galvanizing.
6. Heavier steel is used for greater strength.



After a "STAR" NACO installation has been made it is always a sales asset. You can point to it with pride and say—"There's an installation that is right."



Think what it would mean to feel that way about every range boiler installation.

Think what it will mean to you in future sales to be able to say—"Ask John Jones, I know he's satisfied."

If you specify "STAR" NACO for every installation you will have a sales feature you can prove superior in every way.

For the "STAR" is built to stand up—built so sturdily that thousands of plumbers now use "STAR" NACO exclusively.

Ask for your copy of the "RANGE BOILER MANUAL." It's a useful book in making both installations and repairs. Contains nearly 100 pages of valuable information with charts and diagrams showing range boiler systems.

Detroit Range Boiler and Steel Barrel Co., Detroit, Mich.

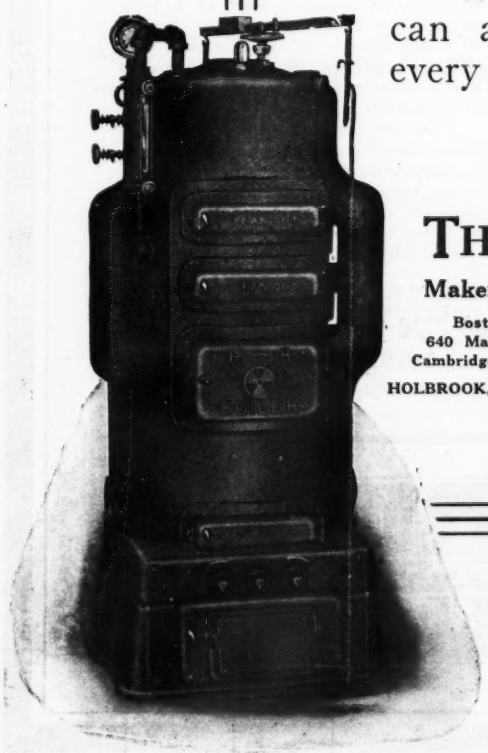
NEW YORK CHICAGO PHILADELPHIA ST. LOUIS SAN FRANCISCO

H-B Boilers Measure up to all Requirements For Economical and Efficient Heating Service

ONE of the essentials of successful boiler making is correct design and proportions. H-B Boilers are properly designed and so constructed that there can be no question as to efficiency and economy.

They are built to last a lifetime and with a minimum of attention will conserve fuel and provide satisfactory heat. A special unique arrangement insures perfect circulation which results in quick heat.

When you install an H-B Boiler you can assure your client satisfaction from every standpoint.



Write for Catalog No. 1265

THE H. B. SMITH COMPANY

Makers of Mills Water Tube Boilers and Princess Radiators

Boston	New York, N. Y.,	Philadelphia, Pa.,	Westfield, Mass.
640 Main St., Cambridge, Mass.	10 E. 39th St.	17th and Arch Sts.	57 Main Street

HOLBROOK, MERRILL & STETSON, San Francisco, Calif., Pacific Coast Representatives

Operation above shows "Toledo" Power Drive attached to "Toledo" No. 350 Pipe Cutter. Man to right is operating "Toledo" No. 25 Threading Device with "Toledo" Power Drive. View taken in Hell Gate Power House, N. Y.

At Hell Gate Power House

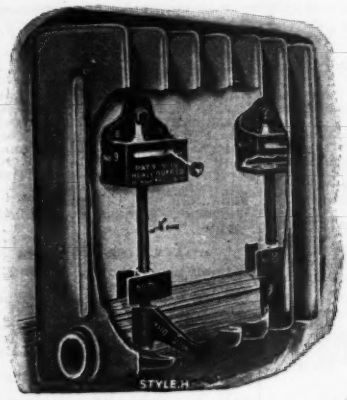
ABOVE is a typical interior view of a pipe shed on a large construction job. Everything shown—fittings, vises, threading devices, cutters — everything EXCEPT ratchet handles. They are not needed. "Toledo" Power Drives are doing the work. Doing it better, faster and easier. This is just one instance where "Toledo" Drives have made it possible to displace heavy, ponderous, stationary threaders and cutters on large pipe-fitting contracts. Over a thousand drives are now in daily use throughout the country. You need one or more in your shop. Write us for catalog.

Five Times Faster Than By Hand

The "Toledo" Power Drive is a money maker. Operates geared pipe threading devices and cutters FIVE TIMES FASTER than by hand. Attaches and detaches just the same and just as quickly as ratchet handle. Can be wheeled anywhere and used wherever proper current is wired.

The Toledo Pipe Threading Machine Co.
TOLEDO, OHIO
New York Office, 50 Church St., New York City

TOLEDO DRIVE
PORTABLE POWER



EZ Radiator Hanger

Horizontal Adjustment
Vertical Adjustment
Baseboard Adjustment
One Bolt in Wall
Reasonable in Price
Saves Labor

A bulletin for the asking

Manufactured by

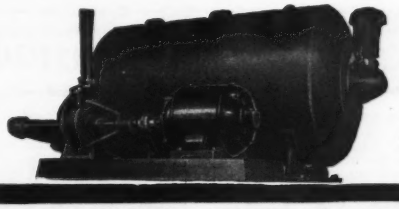
Healy-Ruff Company

General Offices:
Minneapolis : Minnesota

NEW YORK OFFICE:
101 Park Ave.

Agents in principal large cities

STYLE R



TRANE PUMPS

are made to save fuel. So well do they perform this service that hundreds of factories, garages, schools, office and apartment buildings are using them today to save money that would otherwise be thrown away. They cannot help but save fuel. They automatically and dependably put the hot condensation back in the boiler, saving at least 15% of the annual fuel bill. When you sell a Trane Pump you render your customer a real engineering service. Write us for all the facts.

Ask for Bulletin No. 2

THE TRANE COMPANY

Established 1883

204 Cameron Avenue - LA CROSSE, WIS.

Chicago, New York, Buffalo, Cleveland, Philadelphia, Boston, Washington, D.C., Salt Lake City, Portland, O.

TRANE

Somerville
(S. I. W.)

Soil Pipe and Fittings

Are Full Weight

A LEAD *Product for Every* LEAD *Purpose*

Drawn-Lead Specialties

The* EAGLE-PICHER LEAD *Company

208 S. La Salle St. CHICAGO, ILL.
1030 Broadway CINCINNATI
JOPLIN, MO.

Domestic Engineering Buyers' Directory

AUTOMATIC AIR VALVES
Beaton & Cadwell Mfg. Co., New Britain, Conn.
Beaton & Corbin Mfg. Co., Southington, Conn.
Dole Valve Co., Chicago.
Fulton Company, Knoxville, Tenn.
Magee Steam Specialty Corp., New York.
Penn Engineering Co., Philadelphia
Russell & Co., W. A., New York.

BASINS, CATCH, ACID PROOF
Duriron Co., Inc., Dayton, O.

BASINS, CATCH, CAST-IRON
Compound Inj. & Spec. Co., Chicago.
Illinois Malleable Iron Co., Chicago.
Wade Ir... San. Mfg. Co., Chicago.

BATHROOM ACCESSORIES
Baker Mfg. Co., S. D., New York.
Bay Ridge Specialty Co., Trenton.
Church Mfg. Co., C. F., Holyoke.
Sanitary Specialties Co., Philadelphia.

BATH TUBS, ENAMELED IRON
Crane Co., Chicago.
Kohler Co., Kohler, Wis.
Mott Iron Works, J. L., Trenton.
Standard San. Mfg. Co., Pittsburgh.
U. S. San. Mfg. Co., Pittsburgh.

BATH TUBS, PORCELAIN
Crane Co., Chicago.
Mott Iron Works, J. L., Trenton.
Trenton Potteries Co., Trenton, N. J.
Wolff Mfg. Co., Chicago.

BENCHES, PIPE, PORTABLE
Martin & Sons, H. P., Owensboro, Ky.
Standard Iron Works, New York.

BIN LABELS
Haddon Bin Label Co., Haddon Heights, N. J.

BOILER CIRCULATING TUBES
Gerard Mfg. Co., Dickson City, Pa.

BOILER SEALING COMPOUNDS
Economy Scale Remover Co., Inc., Chicago Heights, Ill.
Shur-Tite Mfg. Co., Cleveland.
"X" Laboratories, New York.

BOILERS, HEATING, GAS-FIRED
Ofeldt Gas-Fired Boiler Co., Inc., Nyack, N. Y.
Solar Eng. Corp., New York.

BOILERS, HEATING, HOT WATER AND STEAM
Burnham Boiler Corp., Irvington, N. Y.
Cox Stove Co., Abram, Philadelphia.
Gorton & Lidgerwood Co., New York.
Hamburg Boiler Works, Hamburg, Pa.
Herbert Boiler Co., Chicago.
Illinois Malleable Iron Co., Chicago.
International Heater Co., Utica, N. Y.
Kewanee Boiler Co., Kewanee, Ill.
Pierce, Butler & Pierce Mfg. Corp., New York.
Prox Co., Frank, Terre Haute, Ind.
Smith Co., H. B., Westfield, Mass.
Solar Eng. Corp., New York.

BOILERS, HEATING, HOT WATER AND STEAM, MAGAZINE FEED
Gorton & Lidgerwood Co., New York.
Herbert Boiler Co., Chicago.
Pierce, Butler & Pierce Mfg. Corp., New York.

BOLTS, EXPANSION
Paine Co., Chicago.

BOLTS, TOGGLE
Paine Company, Chicago.

BOWLS, WATER CLOSET
Apex Supply Co., Inc., Trenton.
Chicago Pottery Co., Chicago.
Crane Co., Chicago.
Douglas Co., John, Cincinnati.
Maddock & Sons, John, Trenton.
Maddock's Sons Co., Thos., Trenton, N. J.
Mott Iron Works, J. L., Trenton.
Standard San. Mfg. Co., Pittsburgh
Sanitary Earthware Specialty Co., Trenton, N. J.
Trenton Potteries Co., Trenton, N. J.
U. S. San. Mfg. Co., Pittsburgh.
Wolff Mfg. Co., Chicago.
Zwermann Co., Robinson, Ill.

BRACKETS, RADIATOR
Hartmann Co., Chas., Brooklyn.
Healy-Ruff Co., Minneapolis, Minn.

BRACKETS, SINK
Cooper Foundry Co., Atchison, Ka.
Illinois Malleable Iron Co., Chicago.
Riverside Fdry. & Galv. Co., Kalamazoo, Mich.
Sanitary Company of America, Linfield, Pa.

BRASS GOODS, GAS
Central Brass Mfg. Co., Cleveland.
Crane Co., Chicago.
Detroit Brass & Malleable Works, Detroit.
Exeter Brass Works, Exeter, N. H.
Haydenville Co., Haydenville, Mass.
Mueller Mfg. Co., H., Decatur, Ill.

BRASS GOODS, PLUMBERS
Acme Brass Works, Detroit.
American Pin Co., Waterbury, Conn.
Capitol Brass Works, Detroit.
Central Brass Mfg. Co., Cleveland.
Chicago Faucet Co., Chicago.
Crane Co., Chicago.
Dearborn Brass Company, Cedar Rapids, Iowa.
Exeter Brass Works, Exeter, N. H.
Haydenville Co., Haydenville, Mass.
Hudson Brass Works, Brooklyn, N. Y.
McRae & Roberts Co., Detroit.
McShane Bell Fdry. Co., Baltimore.
Mueller Mfg. Co., H., Decatur, Ill.
Perkes Co., Charles, Philadelphia.
Peru Brass & Mfg. Co., Peru, Ind.
Pioneer Alloy Products Co., Cleveland.
Rudolph, Alfred J., Philadelphia.
Savill's Sons, Thos., Philadelphia.
Speakman Co., Wilmington, Del.
Street & Kent Mfg. Co., Chicago.
Vulcan Brass Mfg. Co., Cleveland.
Wise, Inc., J. B., Watertown, N. Y.
Wolverine Brass Works, Grand Rapids, Mich.
Wolff Mfg. Co., Chicago.
Woodward-Wanger Co., Philadelphia.

BRASS GOODS, STEAM
Capitol Brass Works, Detroit.
Crane Co., Chicago.
Detroit Brass & Malleable Works, Detroit.
Exeter Brass Works, Exeter, N. H.
Fulton Company, Knoxville, Tenn.
Haydenville Co., Haydenville, Mass.
Jenkins Bros., New York.
Kennedy Valve Mfg. Co., Elmira, N. Y.
Ohio Brass Co., Mansfield, O.
Perkes Co., Charles, Philadelphia.

BRASS GOODS, WATER
Capitol Brass Works, Detroit.
Central Brass Mfg. Co., Cleveland.
Crane Co., Chicago.
Detroit Brass & Malleable Works, Detroit.
Exeter Brass Works, Exeter, N. H.
Haydenville Co., Haydenville, Mass.
Jenkins Bros., New York.
Kennedy Valve Mfg. Co., Elmira, N. Y.
Mueller Mfg. Co., H., Decatur, Ill.
Ohio Brass Co., Mansfield, O.
Perkes Co., Charles, Philadelphia.
Street & Kent Mfg. Co., Chicago.
Trenton Brass & Machine Co., Trenton, N. J.
Wolverine Brass Works, Grand Rapids, Mich.
Woodward-Wanger Co., Philadelphia.

BURNERS, GAS
Cleveland Gas Burner & Appliance Co., Cleveland.
Solar Eng. Corp., New York.

The Ofeldt Gas Fired Boiler Co., Inc.

Nyack, N. Y.

Makers of Gas-Fired Steam Boilers

PLENTY OF
HOT WATER
NO EXTRA EXPENSE

EASILY connected to outside of steam, vapor or hot water boiler; does away with fuel-wasting coil in fire pot. Uses surplus heat of boiler. Does not overheat or underheat. Will not burn out, once installed.

An unusual opportunity for live dealers. Order now and be prepared for the demand being created. We furnish co-operation and practical sales helps to give you full benefit of our national advertising. List price, $16.00.

Write for full details

THE HOTSTREAM HEATER CO.
"Makers of Heaters that Heat"
CLEVELAND, Ohio

The **Hotstream**

We also make a complete line of Gas and Kerosene Water Heaters.

INDIRECT WATER HEATER

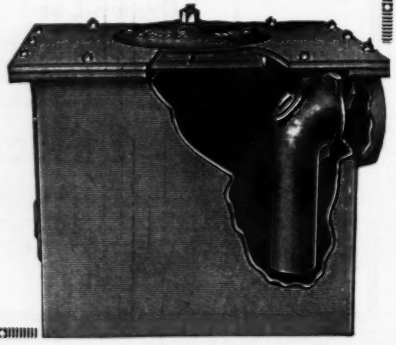
The Boston Grease Trap

(Square Pattern)

Widely Known and Famed for Service.

This trap is particularly desirable for use under sinks where the height is limited.

Easy to install—easy to clean out. Keeps pipes free from grease.



R. ESTABROOK'S SONS
1st and C Sts.,
South Boston, Mass.

GAUGE GLASS
IMMEDIATE DELIVERY
STANDARD AND HIGH PRESSURE

Our High Pressure Glasses have fused ends and are annealed by special process. Try them for highest steam pressures.

We manufacture Automatic Air Valves and Hot Water Thermometers.

MAGEE STEAM SPECIALTY CORPORATION
136-138 Beekman Street, NEW YORK CITY

GENUINE

Armstrong Stocks & Dies

FOR THREADING PIPE OR ROD

PIPE CUTTERS
MALLEABLE IRON HINGED PIPE VISES
PIPE MACHINES

Manufactured by

THE ARMSTRONG MFG. CO.

248 Canal Street, New York **Factory: Bridgeport, Conn.**

Catalogue Mailed on Request

Wellby Special Automatic Air Valve

THIS valve is especially designed for high class work. Carbon post is reinforced with brass tube and brass ferrule. Adjusting screw and pin are each assembled carefully to assure perfect operation of the valve.

Every part is inspected and tested, as well as the completed valve, which is tested both with steam pressure and air before leaving our factory.

You can install the Wellby Special anywhere and depend upon it for satisfactory operation.

Ask your jobber

Wellby Special No. 5

SEE OUR CATALOGUE in SWEET'S

The Beaton & Cadwell Mfg. Co., New Britain, Conn.

PIONEERS AND LARGEST PLATE MANUFACTURERS IN THE COUNTRY

New York Office and Store, 234 Water Street.
Western Representative—Harry Verbeek Co., 208 N. Wells St., Chicago.
Southern Atlantic States Representative—P. C. Abbott, Richmond, Va.
Eastern Canadian Representative—J. R. Devereux & Co., New Birks Bldg., Montreal, Quebec.
Western Canadian Agents—A. E. Hinds & Co., Galt Bldg., Winnipeg, Canada.
Pacific Coast Representative—Wm. P. Horn & Co., Rialto Bldg., San Francisco, Cal.
Wm. P. Horn & Co., 711 Deekum Bldg., Portland, Ore.
Wm. P. Horn & Co., 301 Kerckhoff Bldg., Los Angeles, Cal.
Wm. P. Horn & Co., 1105 L. C. Smith Bldg., Seattle, Wash.

Domestic Engineering Buyers' Directory

CEMENT, IRON
Hause Mfg. Co., Chas. F., Omaha.
Johns-Manville, Inc., New York.
Smooth-On Mfg. Co., Jersey City.

CESSPOOLS, BRASS
Street & Kent Mfg. Co., Chicago.

CESSPOOLS, CAST-IRON
Estabrook's Sons, R., So. Boston.
Sanitary Company of America, Linfield, Pa.

CLEANERS AND SOLVENTS, PIPE
Blue Seal Chem. Co., Roselle, N. J.
Chamberlain Co., Pittsburgh.

CLEANING COMPOUNDS
Chamberlain Co., Pittsburgh.
Porcela-Radax Co., New Brighton, Pa.

CLEAN-OUTS, CAST-IRON
Blake Specialty Co., Rock Island, Ill.
Compound Inj. & Specialty Co., Chicago.
Cooper Fdry. Co., Atchison, Kan.
Estabrook's Sons, R., So. Boston.
Sanitary Company of America, Linfield, Pa.

CLOCKS, BOILER AND FURNACE
Tidey Heat Specialties Co., New York.
Tillery's Little Janitor Clock Co., Newark, N. J.

CLOSET BENDS
Compound Inj. & Specialty Co., Chicago.
Sanitary Company of America, Linfield, Pa.

COCKS, BALL
American Pin Co., Waterbury, Conn.
Burlington Brass Works, Burlington, Wis.
Exeter Brass Works, Exeter, N. H.
Frost Mfg. Co., Kenosha, Wis.
Haydenville Co., Haydenville, Mass.
Illinois Malleable Iron Co., Chicago.
McShane Bell Fdry. Co., Baltimore.
Morency-Van Buren Mfg. Co., Sturgis, Mich.
Mueller Mfg. Co., H., Decatur, Ill.
Sherwood Brass Works, Detroit.
Vulcan Brass Mfg. Co., Cleveland.
Wolverine Brass Works, Grand Rapids, Mich.
Woodward-Wanger Co., Philadelphia.

COCKS, GAUGE
Capitol Brass Works, Detroit.

COOLERS, WATER
Central Brass Mfg. Co., Cleveland.
Taylor Co., Halsey W., Warren, O.

COUPLINGS, UNION
Capitol Brass Works, Detroit.
Crane Co., Chicago.
Exeter Brass Works, Exeter, N. H.
Illinois Malleable Iron Co., Chicago.
Street & Kent Mfg. Co., Chicago.
Woodward-Wanger Co., Philadelphia.

COVERING, PIPE AND BOILER
Johns-Manville, Inc., New York.

COVERING, PIPE, UNDERGROUND
Johns-Manville, Inc., New York.
Wyckoff & Son Co., A., Elmira, N. Y.

CURTAINS, BATH
Sanitary Bath Curtain Mfg. Co., New York City.

CURTAINS, SHOWER
Sanitary Bath Curtain Mfg. Co., New York City.

CUTTERS, PIPE
Armstrong Mfg. Co., Bridgeport, Conn.
B. & B. Tool & Machine Works, Chicago.
Borden Co., Warren, Ohio.
Crown Die & Tool Co., Chicago.
Duriron Co., Inc., Dayton, O.
Nye Tool & Mach. Works, Chicago
Rudolph, Alfred J., Philadelphia.
Toledo Pipe Threading Machine Co., Toledo, O.
Trimont Mfg. Co., Boston.
Woodward-Wanger Co., Philadelphia.

DAMPER REGULATORS
Sterling Engineering Co., Milwaukee, Wis.

DRAIN BOARDS
Trageser Steam Copper Works, J., New York.

DRAINERS, CELLAR
Economy Pumping Machine Co., Chicago.
Haydenville Co., Haydenville, Mass.
Kemp Mfg. Co., C. M., Baltimore.

DRAINS, FLOOR, ACID PROOF
Duriron Co., Inc., Dayton, O.

DRAINS, FLOOR AND GARAGE
Blake Specialty Co., Rock Island, Ill.
Chicago Pipe Co., Chicago.
Compound Inj. & Specialty Co., Chicago.
Cooper Fdry Co., Atchison, Kan.
Crampton-Farley Brass Co., Kansas City, Mo.
Josam Mfg. Co., Michigan City, Ind.
Kennedy Valve Mfg. Co., Elmira, N. Y.
Sanitary Company of America, Linfield, Pa.
Wade Iron San. Mfg. Co., Chicago.

DRAINS AND DRIP PANS, REFRIGERATOR
Central Brass Mfg. Co., Cleveland.
Cooper Foundry Co., Atchison, Kan.
Detroit Brass & Malleable Works, Detroit.
Riverside Fdry. & Galv. Co., Kalamazoo, Mich.
Sanitary Company of America, Linfield, Pa.

DRAINS, ROOF
Josam Mfg. Co., Michigan City, Ind.

DRAINS, SHOWER
Cooper Foundry Co., Atchison, Ks.
Josam Mfg. Co., Michigan City, Ind.
Sanitary Company of America, Linfield, Pa.
Speakman Co., Wilmington, Del.
Street & Kent Mfg. Co., Chicago.

DRINKING FOUNTAINS
Acme Brass Works, Detroit.
Central Brass Mfg. Co., Cleveland.
Chicago Faucet Co., Chicago.
Chicago Pottery Co., Chicago.
Crane Co., Chicago.
Haydenville Co., Haydenville, Mass.
Imperial Brass Mfg. Co., Chicago.
Kohler Co., Kohler, Wis.
Mott Iron Works, J. L., Trenton.
Mueller Mfg. Co., H., Decatur, Ill.
Standard San. Mfg. Co., Pittsburgh.
Taylor Co., Halsey W., Warren, O.
U. S. Sanitary Mfg. Co., Pittsburgh.
Wolff Mfg. Co., Chicago.

DRUM TRAPS AND CLEANOUTS
Blake Specialty Co., Rock Island, Ill.
Compound Inj. & Specialty Co., Chicago.
Cooper Foundry Co., Atchison, Kas.
Eagle-Picher Lead Co., Cincinnati.
Riverside Fdry. & Galv. Co., Kalamazoo, Mich.
Sanitary Company of America, Linfield, Pa.
Wade Iron San. Mfg. Co., Chicago.

ELECTRIC LIGHT AND POWER PLANTS
Kohler Co., Kohler, Wis.

FAUCETS, LAUNDRY
Burman Specialty Co., Minneapolis

FERRULES
Douglas Co., John, Cincinnati.
Eagle-Picher Lead Co., Cincinnati.
Haydenville Co., Haydenville, Mass.
Illinois Malleable Iron Co., Chicago.
Mechanicville Specialty Supply Mfg. Co., Mechanicville, N. Y.
Mueller Mfg. Co., H., Decatur, Ill.
Raymond Lead Works, Chicago.
Rudolph, Alfred J., Philadelphia.
Sanitary Company of America, Linfield, Pa.
Street & Kent Mfg. Co., Chicago.

Price Service Quality

TRAGESER PRODUCTS

Recognized by Master Plumbers as leaders in their particular field.

Our Line Includes:

Pantry Sinks, Copper and German Silver.
Drainboards, German Silver and White Metal.
Range Boilers, Copper and Galvanized.
Storage Tanks for Gasoline, Expansion Tanks.
Pneumatic Water Supply Tanks.
Steam Thawing Machines.

Storage Tanks for Hot Water, Black, Galvanized and Copper.

Write for Catalog.

John Trageser Steam Copper Works
447-457 W. 26th St., New York City

PORCELA

The Bath Tub Cleaner

Contains no grit.
No acid.
Keeps fixtures like new.

Most contracting plumbers use Porcela and recommend it to their customers.

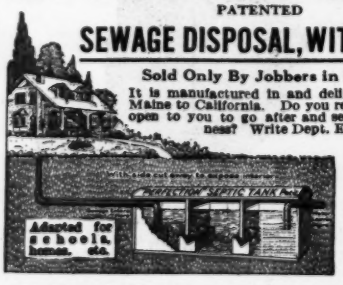
If you haven't Porcela in stock order from your jobber. Write us for free sample can and descriptive folder.

PORCELA-RADAX CO.
NEW BRIGHTON, PA.

MR. PLUMBER:

The "Perfection" Septic Tank
PATENTED

SEWAGE DISPOSAL, WITHOUT SEWERS



Sold Only By Jobbers in Plumbing Supplies

It is manufactured in and delivered from 27 cities, from Maine to California. Do you realize the **big opportunity** open to you to go after and secure good profitable business? Write Dept. E for detailed information.

It's Free

United Cement Products Co.
Sole Manufacturers
Executive Offices:
27 E. Vermont St.
Indianapolis Ind.

Paragon Self-Closing Work
Champion for Over Twenty Years

We were the originators of the ball bearing idea in self-closing work. Paragon Ball Bearing Self-Closing Faucets have been recognized as the best for twenty years. They are guaranteed for ten years and built for permanent service.

Sold by all leading jobbers.
Write for catalogue.

The Vulcan Brass Mfg. Co.
CLEVELAND, OHIO

Self-Closing Basin Cock B-207

Eastern Representative, Melvin A. Rosenberg, 108-10 W. 34th St., New York City

Mr. Steam Fitter---You Practical Heating Engineer

will understand why an Annual Production of

4000 Automatic Electric Condensation Pumps

Fig. 2176 Type

Enables Us to Produce the

Best Pump for the Lowest Price

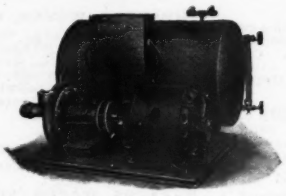


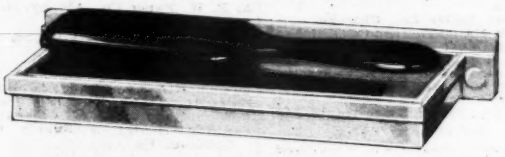
Fig. 2176

These units are self contained and complete in every detail. Absolutely Reliable, Dependable and Durable. Light enough for two men to handle any size unit up to 25,000 square feet capacity. They work on exceptionally close water line and relieve all troublesome heating systems of condensation quickly. Radiators may set on same floor as boiler or below water level in boiler. Are entirely automatic. Shipments from stock. Send for practical data.

Economy Pumping Machinery Co.

Main Offices and Warehouse: 112-118 No. Curtis St., Chicago, Ill.

Sales Engineers in All Cities and Large Towns



No. 165 "Samsonchina" Comb and Brush Holder

A handy line for new jobs, old jobs or odd jobs

"Samsonchina" Bathroom Accessories

An up-to-date line—no back numbers in the entire list

A complete china line with a piece for every purpose.

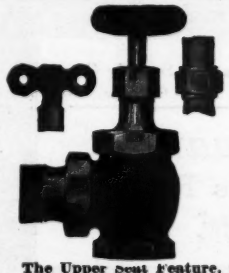
The pieces screw up like metal fixtures, but the screws are concealed with small china caps.

The finest and least expensive Comb and Brush Holder that you can buy.

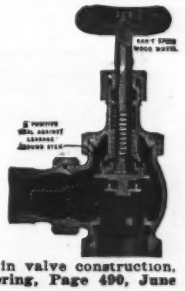
Have your jobber send you our catalogue and quote you on our entire line.

Price and quality will hit you right

S. D. Baker Manufacturing Co., 234 W. 14th Street, New York City



MARSH UNION BONNET DOUBLE SEAT VALVES



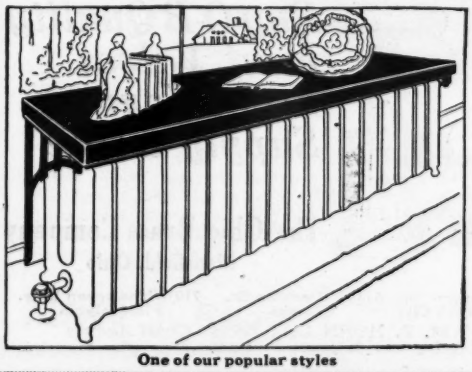
This Union Bonnet Construction is particularly adapted for Schools and Public Buildings where weight and hard service are factors.

The Upper Seat Feature, used in all of our valves, except Packless and Modulated, is a material improvement in valve construction, without additional cost, and is shown more clearly in a larger cut, Screwed Bonnet pattern, in Domestic Engineering, Page 490, June 4th issue.

We specialize on high grade radiator valves and make the largest line of any company in the world: Globes, Angles, Modulated and Gates, Union Bonnet pattern; and Globes, Angles and Packless, Corner and Back Offsets, Screwed Bonnet pattern, all sizes.

Printed matter and prices on application.

MARSH VALVE COMPANY : : : : Erie, Pennsylvania



One of our popular styles

TRICO ART METAL RADIATOR COVERS SHIELD-HUMIDIFIER-SEAT

Humidifying Shields

are helping others to get business--why not you?

TRICO is an all-season seller. Its field is limited only to the number of radiators installed. You can recommend it to your customers with the assurance it will "deliver the goods."

Serves the triple purpose of a seat, shield and humidifier. Promotes health by keeping proper balance between temperature and moisture.

Easily attached. Remains rigid. Made to fit any size or style radiator. Send us your specifications. Prompt deliveries guaranteed.

Write for helpful sales literature

ART METAL RADIATOR COVER CO.

General Offices and Factory: Oakley and Oakdale Avenues

Display Room: Sixth Floor Leiter Building CHICAGO, U. S. A.

Domestic Engineering Buyers' Directory

FITTINGS, BATH SUPPLY AND WASTE
American Pin Co., Waterbury, Conn.
Central Brass Mfg. Co., Cleveland.
Crane Co., Chicago.
Exeter Brass Works, Exeter, N. H.
Haydenville Co., Haydenville, Mass.
Mueller Mfg. Co., H., Decatur, Ill.
Speakman Co., Wilmington, Del.
Street & Kent Mfg. Co., Chicago.
Wise, Inc., J. B., Watertown, N.Y.
Wolverine Brass Works, Grand Rapids, Mich.
Woodward-Wanger Co., Philadelphia.

FITTINGS, BRASS
Crane Co., Chicago.
Exeter Brass Works, Exeter, Mass.
Haydenville Co., Haydenville, Mass.
Mueller Mfg. Co., H., Decatur, Ill.
Street & Kent Mfg. Co., Chicago.
Wolverine Brass Works, Grand Rapids, Mich.

FITTINGS, LEAD
Eagle-Picher Lead Co., Cincinnati.
Exeter Brass Works, Exeter, N. H.

FITTINGS, MALLEABLE IRON
Crane Co., Chicago.
Detroit Brass & Malleable Works, Detroit.
Illinois Malleable Iron Co., Chicago.
Street & Kent Mfg. Co., Chicago.

FLANGES, CLOSET, SHORT HORN
Groeniger Mfg. Co., Columbus, O.
Rudolph, Alfred J., Philadelphia.
Sanitary Specialty Co., Newark, N. J.

FLANGES, ROOF
Bullard Specialty Co., Tiffin, O.
Butler Mfg. Co., Minneapolis, Minn.
Eagle-Picher Lead Co., Cincinnati.
Harker Mfg. Co., Cincinnati.
Midland Metal Mfg. Co., Kansas City, Mo.
Simplex Mfg. Co., Chicago.

FLOATS, COPPER
Haydenville Co., Haydenville, Mass.
Wolverine Brass Works, Grand Rapids, Mich.

FLOOR AND CEILING PLATES
Beaton & Cadwell Mfg. Co., New Britain, Conn.
Beaton & Corbin Mfg. Co., Southington, Conn.
Crane Co., Chicago.
Penn Engineering Co., Philadelphia.
Russell & Co., W. A., New York.
Wolverine Brass Works, Grand Rapids, Mich.

FURNACES AND TORCHES, GASOLINE AND KEROSENE
Clayton & Lambert Mfg. Co., Detroit.
Detroit Torch & Mfg. Co., Detroit.
Double Blast Mfg. Co., N. Chicago.
Turner Brass Wks., Sycamore, Ill.

GAGE GLASS
Magee Steam Specialty Corp., New York.

GAGES, STEAM AND ALTITUDE
Capitol Brass Works, Detroit.
Imperial Brass Mfg. Co., Chicago.

GAGES, WATER
Beaton & Cadwell Mfg. Co., New Britain, Conn.
Capitol Brass Works, Detroit.
Detroit Brass & Malleable Works, Detroit.
Magee Steam Specialty Corp., New York.
Ohio Brass Co., Mansfield, O.
Penn Engineering Co., Philadelphia

GARBAGE BURNERS
Illinois Malleable Iron Co., Chicago.
Kewanee Boiler Co., Kewanee, Ill.

GASKETS
Johns-Manville, Inc., New York.
Wolverine Brass Works, Grand Rapids, Mich.

HANGERS, PIPE
Beaton & Cadwell Mfg. Co., New Britain, Conn.
Crane Co., Chicago.
Illinois Malleable Iron Co., Chicago.
Penn Engineering Co., Philadelphia
Riverside Fdry. & Galv. Co., Kalamazoo, Mich.
Wolverine Brass Works, Grand Rapids, Mich.

HEAT CONTROL SYSTEMS
Fulton Company, Knoxville, Tenn.
Johnson Service Co., Milwaukee.
Powers Regulator Co., Chicago.

HEATERS, AUXILIARY
Hotstream Heater Co., Cleveland.

HEATERS, GARAGE
Solar Eng. Corp., New York.

HEATERS, LAUNDRY
Burnham Boiler Corp., Irvington, N. Y.
Continental Brass & Foundries Co., St. Louis, Mo.
Cox Stove Co., Abram, Philadelphia.
Gorton & Lidgerwood Co., New York.
Herbert Boiler Co., Chicago.
Illinois Malleable Iron Co., Chicago.
International Heater Co., Utica, N. Y.
Kewanee Boiler Co., Kewanee, Ill.
Pierce, Butler & Pierce Mfg. Corp., New York.
Prox Co., Frank, Terre Haute, Ind.

HEATERS, TANK
Hotstream Heater Co., Cleveland.
Illinois Malleable Iron Co., Chicago.
Kewanee Boiler Co., Kewanee, Ill.

HEATERS, WATER, COAL
Cox Stove Co., Abram, Philadelphia.
Gorton & Lidgerwood Co., New York.
Herbert Boiler Co., Chicago.
Illinois Malleable Iron Co., Chicago.
International Heater Co., Utica, N. Y.
Kewanee Boiler Co., Kewanee, Ill.
Pierce, Butler & Pierce Mfg. Corp., New York.
Prox Co., Frank, Terre Haute, Ind.

HEATERS, WATER, ELECTRIC
Milwaukee Mfg. Co., Milwaukee.

HEATERS, WATER, GAS
American Heater Corp., St. Louis.
Hoffman Heater Co., Lorain, O.
Hotstream Heater Co., Cleveland.
Humphrey Co., Kalamazoo, Mich.
Kompak Co., New Brunswick, N. J.
Pittsburgh Water Heater Co. Pittsburgh.

HEATERS, WATER, KEROSENE
Hotstream Heater Co., Cleveland.

HEATERS, WATER, STEAM
Excelso Specialty Works, Buffalo.
Hotstream Heater Co., Cleveland.
Letcher, Henry W., New York.

HEATERS, WATER STORAGE
Hoffman Heater Co., Lorain, O.
Kompak Co., New Brunswick, N. J.
Solar Eng. Corp., New York.

HOLDERS, TOILET PAPER
A. P. W. Paper Co., Albany, N. Y.

HOT WATER HEATING SPECIALTIES
Donnelly Mfg. Co., Boston.
D & T Mfg. Co., St. Louis, Mo.
Fulton Company, Knoxville, Tenn.
Powers Regulator Co., Chicago.
Reading Heater & Supply Co., Reading, Pa.

HUMIDITY CONTROL
Johnson Service Co., Milwaukee
Powers Regulator Co., Chicago.

HYDRANTS
Haydenville Co., Haydenville, Mass.
Illinois Malleable Iron Co., Chicago.
Kemp Mfg. Co., C. M., Baltimore.
Mueller Mfg. Co., H., Decatur, Ill.

JOINT RUNNERS
Johns-Manville, Inc., New York.

Double Needle Torches
Do Double Work

because the Burners have Improved Generators that superheat the gas before entering the combustion chamber, securing a much higher degree of heat with great economy of time in doing the work and saving of fuel. They will outlast two ordinary Burners. Needles are blunt and overcome 60 per cent of all Burner trouble caused by the old style Sharp Pointed Needle. Upper Needle cleans, lower Needle regulates. A time and money saver. Jobbers' supply at factory prices. Get a catalogue.

No. 208 Torch
List Price $17.00
Ask for Discount

Clayton & Lambert Mfg. Co.
10561 Knodell Ave., Detroit, Mich., U. S. A.

National Plumbing & Heating Supply Co.
201 East 63rd Street, Chicago, Ill.

The January
Price Guide Is Ready
Get your copy?
'Phone or write

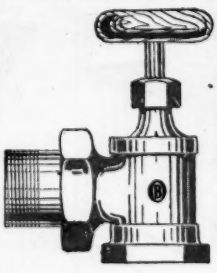
NATIONAL

Dole
Guaranteed for the Life of the System
We hereby guarantee the Dole Shure-Vent Air Valve to which this band is attached, when properly installed, to give perfect satisfaction during the life of the heating system. Should any Dole Shure-Vent Air Valve fail to vent properly at any time, we will furnish a new one without question or charge.
The Dole Valve Company
Chicago, Illinois
Treas. & Mgr.

This Guarantee Proves
That You Can Stop Heating Complaints With the

DOLE SHURE-VENT AIR VALVE

The DOLE VALVE CO.
Manufacturers of a Complete line of Packless Radiator Valves and Air and Vacuum Valves
1925 Carroll Avenue
CHICAGO, Ill.



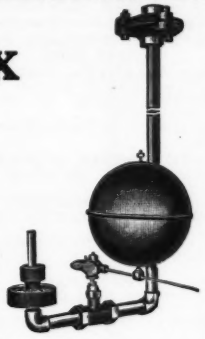
Buy O-B Quality First Valves From Your Supply House

The Ohio Brass Company
Mansfield, Ohio

50 Church St. New York City
343 S. Dearborn St. Chicago
710 Witherspoon Bldg. Philadelphia

WM. P. HORN CO., *Pacific Coast Agents*
Los Angeles Seattle Portland San Francisco

The Climax Cellar Drainer



Why use uncertain and costly waterproofing of cement, asphalt, tar, etc., when the CLIMAX Cellar Drainer is so positive, dependable and inexpensive? The CLIMAX is usually installed in the end, why try something else in the beginning?

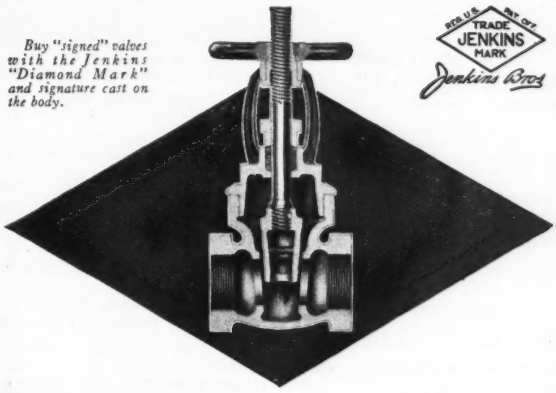
THE C.M. KEMP MFG. CO.

405-415 E. OLIVER STREET

BALTIMORE, MD.

Pacific Coast Agents: Wm. P. Horn Co.
Rialto Building, San Francisco, Cal.
Kerchoff Building, Los Angeles, Cal.
Deekum Building, Portland, Ore.
L. C. Smith Building, Seattle, Wash.

Buy "signed" valves with the Jenkins "Diamond Mark" and signature cast on the body.



Jenkins Extra Heavy Brass Gate Valves

Fig. 282

Sectional view Fig. 282, outside screw and yoke, rising spindle. These valves are very heavy, are suitable for steam and water service of all kinds under heavy pressures and high temperatures. Especially adapted for service in modern high pressure power plants. Suitable 250 pounds steam and 400 pounds water, working pressure.

JENKINS BROS.

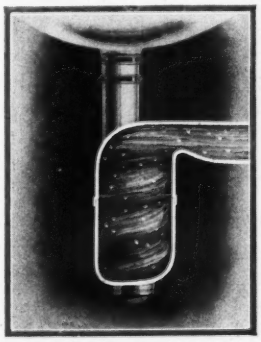
New York Boston Philadelphia Chicago Montreal London Havana

FACTORIES:
Bridgeport, Conn.; Elizabeth, N. J.; Montreal, Canada

Jenkins Valves SINCE 1864

Safety First

RUDOLPH Traps for all plumbing fixtures are *self-scouring* and *non-syphonic*. They are so constructed as to cause the waste water to wash away the sediment which would generate poison, unhealthy gases.



Made of cast iron galvanized and cast brass, rough or nickel plated, for lead or iron pipe, in all sizes.

Bath Traps above or under floor, Sink, Lavatory, Pantry Sink and Wash Tray Traps to wall or floor.

Of simple construction and installation. No baffle plates or deflectors. No parts or inner surface that is not cleansed with equal effectiveness. Have stood up under all tests made.

The RUDOLPH metal-to-metal adjustable Water Closet Floor Flange is made to fit any stock size bowl. Will keep tight if floors are not level or pipe not plumb. Adjustment overcomes all unevenness. Simply constructed—easily and securely applied to lead or iron pipe. Moderate price in quantity orders.

Manufactured by

Alfred J. Rudolph 139 North 3rd Street PHILADELPHIA, PA.

Goods You Can Tie To

It pays to be sure of the brass goods you handle and install.

Trenton Products

have proved their superiority by actual use. The kind you can install and forget about.

The Trenton Wash Tray Plug is made in a variety of patterns. Finished brass or nickel plated.

Order from your jobber.

The Trenton Brass & Machine Co.

Trenton, New Jersey

Domestic Engineering Buyers' Directory

LAUNDRY TRAYS
Kohler Co., Kohler, Wis.
Mott Iron Works, J. L., Trenton.
Sanitary Earthenware Spec. Co., Trenton, N. J.
Standard San. Mfg. Co., Pittsburgh.
Trenton Potteries Co., Trenton, N. J.
U. S. Sanitary Mfg. Co., Pittsburgh.
Wolff Mfg. Co., Chicago.

LAVATORIES, ENAMELED IRON
Crane Co., Chicago.
Kohler Co., Kohler, Wis.
Mott Iron Works, J. L., Trenton.
Standard San. Mfg. Co., Pittsburgh.
U. S. San. Mfg. Co., Pittsburgh.
Wolff Mfg. Co., Chicago.

LAVATORIES, PORCELAIN
Crane Co., Chicago.
Wolff Mfg. Co., Chicago.

LAVATORIES, VITREOUS CHINA
Crane Co., Chicago.
Maddock's Sons Co., Thos., Trenton, N. J.
Mott Iron Works, J. L., Trenton.
Sanitary Earthenware Spec. Co., Trenton, N. J.
Standard San. Mfg. Co., Pittsburgh.
Trenton Potteries Co., Trenton, N. J.
Wolff Mfg. Co., Chicago.

LEAD FOR PLUMBERS
Eagle-Picher Lead Co., Cincinnati.
Raymond Lead Works, Chicago.

LEAD ROPE
Eagle-Picher Lead Co., Cincinnati.
Raymond Lead Works, Chicago.

LEGS, LAUNDRY TRAY
Illinois Malleable Iron Co., Chicago.
Riverside Fdry. & Galv. Co., Kalamazoo, Mich.
Sanitary Company of America, Linfield, Pa.

LEGS, SINK
Illinois Malleable Iron Co., Chicago.
Sanitary Company of America, Linfield, Pa.

LIQUID SOAP FIXTURES
Imperial Brass Mfg. Co., Chicago.

LOCATORS, PIPE
O'Donnell Specialty Co., New York

MIXERS, SHOWER BATH
Hoffmann & Billings Mfg. Co., Milwaukee, Wis.
Imperial Brass Mfg. Co., Chicago.
Speakman Co., Wilmington, Del.
Street & Kent Mfg. Co., Chicago.
Sturgis Company, Sturgis, Mich.

NIPPLES, PIPE
Fretz Jr. & Co., S. S., Philadelphia.

PARTITIONS, TOILET
Sanymetal Products Co., Cleveland.
Weis Mfg. Co., Henry, Atchison, Kan.

PIPE CUTTING AND THREADING MACHINES, PORTABLE
Borden Co., Warren, O.
Columbus Machine Works, Columbus, Ind.
Oster Mfg. Co., Cleveland, O.
Toledo Pipe Threading Machine Co., Toledo, O.

PIPE CUTTING AND THREADING MACHINERY
Armstrong Mfg. Co., Bridgeport, Conn.
Bignall & Keeler Mch. Works, Edwardsville, Ill.
Borden Co., Warren, O.
Columbus Machine Works, Columbus, Ind.
Oster Mfg. Co., Cleveland, O.

PIPE HOOKS AND STRAPS
Beaton & Cadwell Mfg. Co., New Britain, Conn.
Wolverine Brass Works, Grand Rapids, Mich.

PIPE AND FITTINGS, ACID PROOF
Duriron Co., Inc., Dayton, O.

PIPE AND FITTINGS, SOIL, CAST IRON
Cooper Foundry Co., Atchison, Kas.
Duriron Company, Dayton, O.
Sanitary Company of America, Linfield, Pa.
Somerville Iron Works, Somerville, N. J.

PIPE INSERTS, CONCRETE
Norjo Mfg. Co., St. Louis, Mo.

PIPE, WROUGHT
National Tube Co., Pittsburgh.

PLUGS, EXPANSION
Rawlplug Co., New York.

POT LEAD
Eagle-Picher Lead Co., Cincinnati.

PRICE BOOKS, PLUMBING AND HEATING
Bareham & Saunders, Rochester, N. Y.
National Plumbing & Heating Sup. Co., Chicago.

PUMPS, AIR
Perkes Company, Charles, Philadelphia.

PUMPS, ELECTRICAL
Dayton Pump & Mfg. Co., Dayton, Ohio.
Deming Co., Salem, O.
Douglas, W. & B., Middletown, Conn.
Duro Pump & Mfg. Co., Dayton, O.
Flint & Walling Mfg. Co., Kendallville, Ind.
Fort Wayne Eng. & Mfg. Co., Fort Wayne, Ind.
Goulds Mfg. Co., Seneca Falls, N. Y.
Leader Iron Works, Decatur, Ill.
Monarch Eng. Co., Dayton, O.
Myers & Bro. Co., F. E., Ashland, O.
Peters Pump Co., Kewanee, Ill.
Sterling Eng'ring Co., Milwaukee.
Valle-Kimes Co., Dayton.

PUMPS, ELECTRICAL CONDENSATION
Chicago Pump Co., Chicago.
Economy Pump Mchy. Co., Chicago.
Goulds Mfg. Co., Seneca Falls, N. Y.
Trane Co., La Crosse, Wis.

PUMPS, FORCE
Dayton Pump & Mfg. Co., Dayton, Ohio.
Deming Co., Salem, O.
Douglas, W. & B., Middletown, Conn.
Duro Pump & Mfg. Co., Dayton, O.
Perkes Company, Charles, Philadelphia.
Goulds Mfg. Co., Seneca Falls, N. Y.
Monarch Eng. Co., Dayton, O.
Myers & Bro. Co., F. E., Ashland, O.
Peters Pump Co., Kewanee, Ill.

PUMPS, TEST
Perkes Company, Charles, Philadelphia.

PUMPS, VACUUM
Chicago Pump Co., Chicago.
Goulds Mfg. Co., Seneca Falls, N. Y.
Illinois Engineering Co., Chicago.
Imperial Brass Mfg. Co., Chicago.
O-E Specialty Mfg. Co., Milwaukee, Wis.

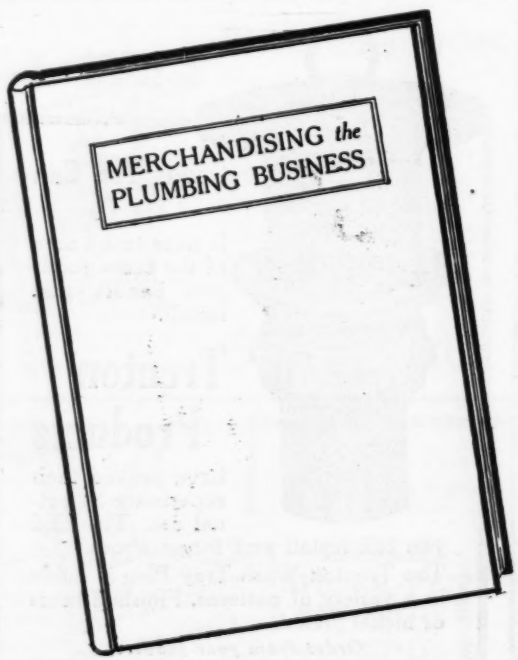
RADIATION CALCULATOR
Mooney, T. J., Nashville, Tenn.

RADIATOR FOOT RAILS
Beaton & Cadwell Mfg. Co., New Britain, Conn.

RADIATOR HANGERS
Healy-Ruff Co., Minneapolis, Minn.

RADIATORS
Kewanee Boiler Co., Kewanee, Ill.
Pierce, Butler & Pierce Mfg. Corp., New York.
Smith Co., H. B., Westfield, Mass.

RADIATOR SHIELD AND HUMIDIFIER
Art Metal Radiator Cover Co., Chicago.



Bound in Cloth.
Size 4½x6¾.
Over 100 pages.
Price $1.50 postpaid.

A New Book

"MERCHANDISING the Plumbing Business" is the title of a new book just off the press, written by K. W. Zoeller. This book was compiled in response to a wide demand by the trade for a non-technical book on modern merchandising that would be of real help to the contractor. There are twenty-six chapters which cover completely merhandising as it applies to the plumbing and heating business.

You will find the scope of this book much broader than the usual discussion on this subject. It is one of those "easy-to-read" books, interesting and thoroughly modern.

It contains many suggestions on Window Display, Showrooms, Advertising and many other subjects.

Domestic Engineering

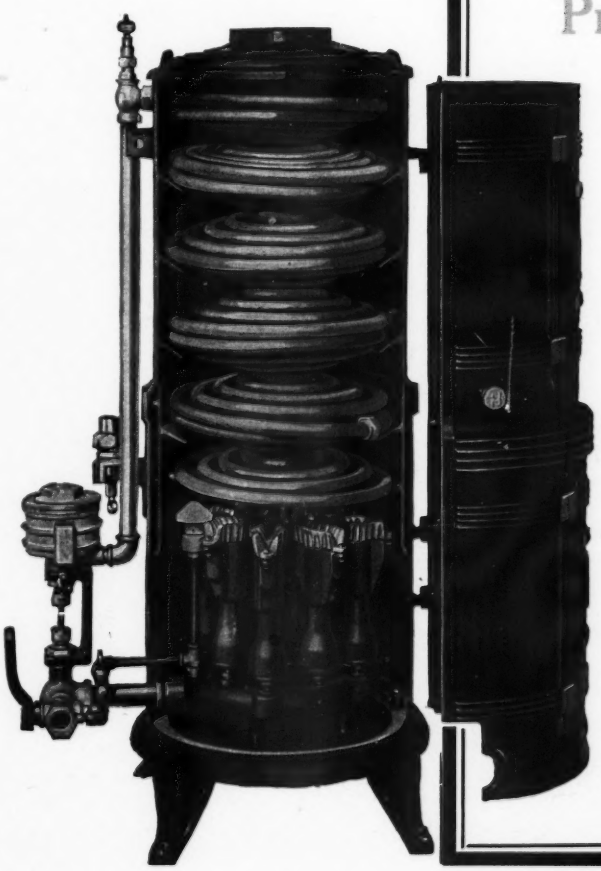
1900 Prairie Ave. :: Chicago

"It's a Money-Maker!"

That's what one dealer wrote us about the new Hoffman "No. 60." "We have already closed six prospects whom I do not believe we could have sold with any other heater—and we have several more in sight."

Like all Hoffman Heaters, the "No. 60" exactly fits a specific demand. It is a non-thermostatic, conservatively rated at 2½ gallons per minute—just the thing for cottage, bungalow or small apartment.

HOFFMAN
No. 60
Pressure Valve Heater



An important feature is its accessibility. The full-length door makes burners and coils instantly accessible.

Why not have the advantage which this sure seller will give you? Mail the coupon now for full information and prices.

THE HOFFMAN HEATER CO.
1478 Oberlin Avenue, LORAIN, OHIO
Branches in all Important Centers

The Hoffman Heater Company is an independent organization, not affiliated with any other heater company, paying no royalties.

Mail This Coupon

The Hoffman Heater Company,
1478 Oberlin Ave., Lorain, Ohio.

I want to be posted on the new Hoffman "No. 60" Pressure Valve Heater. Please send me full information and prices.

Name .....

Address .....

City..... State.....

Four Business Helps —and One More

THERE is nothing like little business helps for helping business. When properly used, these helps keep pecking away all the time. And this pecking gradually pecks into the minds of men and women, thoughts which create desires, and desires lead to sales.

The Bath a Day campaign is a big help to plumbing and heating. And the helps displayed on this page are a big help to a Bath a Day. So use the helps regularly—every day in the year—for it is the constant pecking that builds business.

Pin a Button on every school child in your neighborhood. The Buttons will boost bathing day and night.

If you are using Stickers, keep on using them. If you are not using them, order a supply at once, and put a Sticker on every piece of mail you send out.

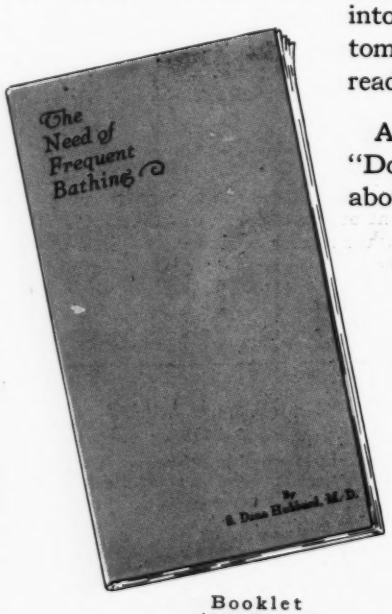
Put a Sign on each window of your shop. These Signs will keep a Bath a Day before all who pass your way.

Hang a couple of Posters in your showroom and paste one or two on each truck.

These four helps will do your business a lot of good. In a year's using they will pay for themselves many times.

And the one more is Dr. Hubbard's "The Need of Frequent Bathing." Order a few hundred of these booklets and put them into your letters, hand them to customers, give them to teachers for reading in the schools.

All these helps are furnished by "Domestic Engineering" at prices that about cover their cost.



Booklet
$1.85 Per 100

The Button
⅞ In. Diameter
$1.75 Per 100

The Sticker
Actual size
45 Cts. Per 1000

The Window Sign
6¾ In. Diameter
10 Cents Each

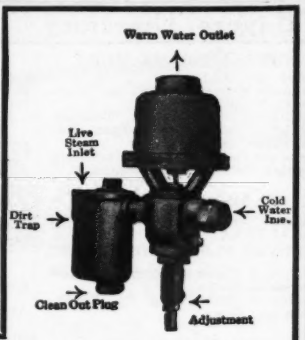
The Poster
21 In. Diameter
10 Cents Each

TO AVOID BOOKKEEPING
KINDLY SEND CHECK
WITH ORDER

DOMESTIC ENGINEERING
1900 Prairie Avenue CHICAGO

It Heats Water Instantly

The Powers Steam and Water Mixer—An Instantaneous Water Heater



WHEREVER there is live steam, the Powers Steam and Water Mixer is the cheapest installation for supplying hot water.

It is simple, safe, and easily installed. Requires only one line of water piping. Makes an instant hit where economy is an item, or where hot water is wanted only occasionally. No storage tank required.

Thermostatically controlled so water at outlet is never too hot—always the desired temperature.

Ask for Bulletin No. 137

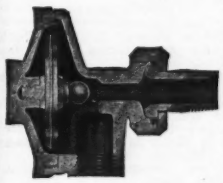
THE POWERS REGULATOR CO
Specialists in Automatic Heat Control

952 Architects Bldg., New York.
2716 Greenview Ave., Chicago.
563 Boston Wharf Bldg., Boston.
The Canadian Powers Regulator Co., Ltd., Toronto, Ont.

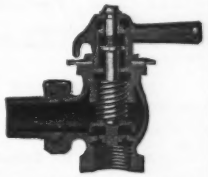
(1709)

ILLINOIS
Vacuum and Vapor Systems
of Steam Heating

Represent highest development in satisfactory and economical heating of buildings. Thousands of installations have been made in practically every type of building.



Illinois Thermo Vacuum Trap produces higher radiator efficiency. The original vertical seat trap. Concave diaphragm—closes against steam. Guaranteed for long life and satisfactory operation.



Illinois Packless Modulating Radiator Valve. Opens or closes on one-half turn. Installed at top of radiator within easy reach. Made strong and heavy of best steam brass.

"Illinois Systems make Warm Friends."

ILLINOIS ENGINEERING CO.
CHICAGO ILLINOIS
Represented in twenty principal cities

We have specialized for over twenty years in the manufacture of heating systems

GORTON QUARTER TURN VALVE

A Quarter Turn of the Wrist Opens or Closes this Valve

A Packing Lock Stem, with Ground Shoulder seating in bonnet insures a Tight Valve that Stays Tight

Send for Catalogue Showing why

GORTON & LIDGERWOOD COMPANY
94 LIBERTY BUILDING, NEW YORK, N. Y.
Fisher Building, Chicago, Illinois

"B & C"
Floor and Ceiling Plates

FLOOR AND CEILING PLATES B & C

Our No. 10 Plate shown here is made of steel and is one of the many styles made exclusively by us. A cleverly contrived spring holds plate firmly to pipe.

We make the original and only registered "B & C" Plates on the market.

Prompt service and satisfactory quality guaranteed.

No. 10
Unsurpassed in Appearance

SEE OUR CATALOGUE IN SWEET'S

THE BEATON & CORBIN MFG. CO.
The Old Original Company
SOUTHINGTON, CONN.

Our Canadian agents, W. H. Cunningham & Hill, Ltd., carry a complete stock in Toronto for the benefit of our Canadian customers.

Domestic Engineering Buyers' Directory

RANGE BOILERS, COPPER
Badger & Sons Co., E. B. Boston.
Gerstein Bros. & Cooper, S. Boston.
Hayes Mfg. Co., Paterson, N. J.
Trageser Steam Copper Wks., J., New York.

RANGE BOILERS, GALVANIZED
Detroit Range Boiler & Steel Barral Co., Detroit.
Koven & Bro., L. O., New York City.
Trageser Steam Copper Works, J., New York.
Wheeling Steel Products Co., Wheeling, W. Va.
Wolff Mfg. Co., Chicago.
Wood Mfg. Co., John, Conshohocken, Pa.

REAMERS, PIPE
Armstrong Mfg. Co., Bridgeport, Conn.
Columbus Machine Works, Columbus, Ind.
Mueller Mfg. Co., H., Decatur, Ill.

REGULATORS, HOT WATER
Fulton Company, Knoxville, Tenn.
Illinois Engineering Co., Chicago.
Johnson Service Co., Milwaukee.
Mueller Mfg. Co., H., Decatur, Ill.
Powers Regulator Co., Chicago.

REGULATORS, HEAT
Fulton Company, Knoxville, Tenn.
Illinois Malleable Iron Co., Chicago.
Johnson Service Co., Milwaukee.
Powers Regulator Co., Chicago.

REGULATORS, TEMPERATURE AND RADIATOR COVERS
Fulton Company, Knoxville, Tenn.

REGULATORS, WATER LEVEL
Ofeldt Gas Fired Boiler Co., Inc., Nyack, N. Y.

RESTS, PIPE
Blake Specialty Co., Rock Island, Ill.
Cooper Foundry Co., Atchison, Kan.

RUBBER GOODS, PLUMBING
Canfield Co., H. O., Bridgeport, Conn.
Lavelle Rubber Co., Chicago.
Wolverine Brass Works, Grand Rapids, Mich.

SEATS, WATER CLOSET
BRE Mfg. Co., Hyde Park, Boston, Mass.
Church Mfg. Co., C. F., Holyoke, Mass.
Never Split Seat Co., Evansville, Ind.
Sanitary Specialties Co., Philadelphia.
Sherwood Brass Works, Detroit.
Standard Tank & Seat Co., Camden, N. J.
Wolff Mfg. Co., Chicago.
Woodward-Wanger Co., Philadelphia.

SHOWERS
Crane Co., Chicago.
Curtainless Shower Co., New York.
Hoffmann & Billings Mfg. Co., Milwaukee.
Hudson Brass Works, Brooklyn, N. Y.
Mueller Mfg. Co., H., Decatur, Ill.
Powers Regulator Co., Chicago.
Speakman Co., Wilmington, Del.
Street & Kent Mfg. Co., Chicago.
Wolff Mfg. Co., Chicago.
Wolverine Brass Works, Grand Rapids, Mich.

SINKS, ACID PROOF
Duriron Co., Inc., Dayton, O.

SINKS, PORCELAIN ENAMELED
Crane Co., Chicago.
Kohler Co., Kohler, Wis.
Mott Iron Works, J. L., Trenton.
Standard San. Mfg. Co., Pittsburgh.
U. S. San. Mfg. Co., Pittsburgh.
Wolff Mfg. Co., Chicago.

SINKS, PORCELAIN
Crane Co., Chicago.
Wolff Mfg. Co., Chicago.

SINKS, SLOP
Crane Co., Chicago.
Kohler Co., Kohler, Wis.
Mott Iron Works, J. L., Trenton.
Sanitary Company of America, Linfield, Pa.
Standard San. Mfg. Co., Pittsburgh.
U. S. Sanitary Mfg. Co., Pittsburgh.
Wolff Mfg. Co., Chicago.

SINKS, VITREOUS CHINA
Crane Co., Chicago.
Maddock's Sons Co., Thos., Trenton, N. J.
Mott Iron Works, J. L., Trenton.
Sanitary Earthenware Spec. Co., Trenton, N. J.
Standard San. Mfg. Co., Pittsburgh.
Trenton Potteries Co., Trenton, N. J.

SINKS, STEEL
Koven & Bro., L. O., New York.

SLEEVES, FLOOR AND CEILING
Beaton & Cadwell Mfg. Co., New Britain, Conn.
Beaton & Corbin Mfg. Co., Southington, Conn.

SOIL PIPE PLATES
Beaton & Cadwell Mfg. Co., New Britain, Conn.

SOLDER
Eagle-Picher Lead Co., Cincinnati.

SOLDERING IRON AND TORCH COMBINATION
Everhot Mfg. Co., Maywood, Ill.

SOOT AND GAS CONSUMER
Utility Product Co., Omaha, Nebr.
Z. T. Soot & Gas Consumer Co., Oshkosh, Wis.

STANDS, BOILER, ADJUSTABLE
Cooper Fdry. Co., Atchison, Kan.
Mechanicville Specialty Supply Mfg. Co., Mechanicville, N. Y.
Sanitary Company of America, Linfield, Pa.
Simplex Boiler Stand Co., Brooklyn
Wessels & Son, D. D., Detroit, Mich.

STANDS, PORTABLE, VISE
Martin & Sons, H. P., Owensboro, Ky.
Standard Iron Works, New York.

STALLS, URINAL
Crane Co., Chicago.
Sanymetal Products Co., Cleveland.
Weis Mfg. Co., Henry, Atchison, Kan.

STEAM HEATING SPECIALTIES
Crane Co., Chicago.
Fulton Company, Knoxville, Tenn.
Illinois Engineering Co., Chicago.
Johns-Manville, Inc., New York.
Lytton Mfg. Corp., Franklin, Va.
O-E Specialty Mfg. Co., Milwaukee
Sterling Eng. Co., Milwaukee.

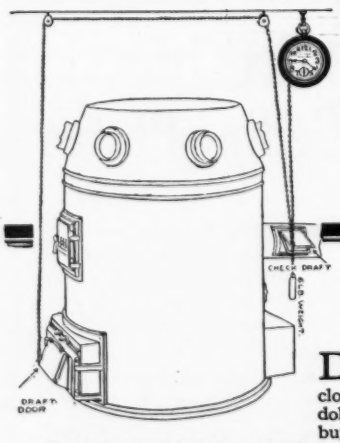
STOCKS AND DIES
American Tool & Machine Co., Baltimore, Md.
Armstrong Mfg. Co., Bridgeport, Conn.
Bignall & Keeler Mch. Works, Edwardsville, Ill.
Borden Co., Warren, O.
Crown Die & Tool Co., Chicago.
Nye Tool & Machine Works, Chicago.
Oster Mfg. Co., Cleveland, O.
Toledo Pipe Threading Machine Co., Toledo, Ohio.

STORAGE OUTFITS, GASOLINE
Goulds Mfg. Co., Seneca Falls, N. Y.
Koven & Bro., L. O., New York.
Trageser Steam Copper Wks., J., New York.

SWITCHES, ELECTRIC, PRESSURE
Penn Electric Machine Co., Des Moines, Ia.

TANKS, CLOSET, COMPOSITION
Hayes-Ruppel Mfg. Co., Grand Rapids, Mich.

TANKS, CLOSET, PORCELAIN ENAMELED
Crane Co., Chicago.
Kohler Co., Kohler, Wis.
Mott Iron Works, J. L., Trenton.
Standard San. Mfg. Co., Pittsburgh.
U. S. San. Mfg. Co., Pittsburgh.



Showing The Tidey connected to warm air furnace.

May be Used on:
Steam Boilers
Hot Water Boilers
Warm Air Furnaces
Pipeless Furnaces

It brings the $$ in

DEALERS like to sell the TIDEY Furnace clock because it brings the dollars in. Folks like to buy the TIDEY Furnace Clock because it brings the heat up—brings it up early in the morning before anyone is astir. For the TIDEY, having been set the previous night, automatically opens the draft door of the furnace and wakes the heat up.

Dealers everywhere will install thousands of these clocks this Fall and Winter. Retail price $6.00, plus your installation charges. Be the first to introduce them in your neighborhood—write at once for illustrated folder, wholesale prices and our special selling-help offer. Jobbers are urged to write for attractive proposition. Also—local distributors wanted for a few desirable territories.

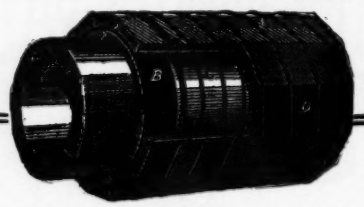
Write for details today

TIDEY HEAT SPECIALTIES CO.

Manufacturers, since 1911, of Furnace Clocks and Thermostats

1107 Broadway NEW YORK CITY

1855 1921



A—2 in. Thick Inner Shell C—¼ in. Dead Air Space
B—Asphaltum Packing D—1 in. Thick Outer Shell

The Dead Air Space Gives Perfect Insulation

Wyckoff's Improved Cypress Steam Pipe Covering has a ¼" dead air space between the two cypress shells, giving it a total thickness of 3¼ inches.

Cypress defies decay—is not affected by soil conditions, water or steam or the alternate wet and dry, hot and cold conditions always found in steam conduits. Each shell is wound under high tension with extra heavy steel wire. Coated with Montezuma Asphalt—the best water proofing known—and rolled in sawdust.

A. WYCKOFF & SON CO., Elmira, N. Y.

Atlanta, Ga.—H. H. White, 1503 4th Nat'l Bank Bldg.
Pittsburgh, Pa.—Johnson-Peter Co., Pittsburgh Terminal Warehouse
Scranton, Pa.—Valley Supply Co., Coal Exchange Bldg.

A Super-Regulator for Vapor Heating Work

POWER IS ITS MIDDLE NAME

Draft dampers are controlled with strong and steady graduated movement, accurately responsive to slightest change in boiler pressure, even to the fraction of an ounce.

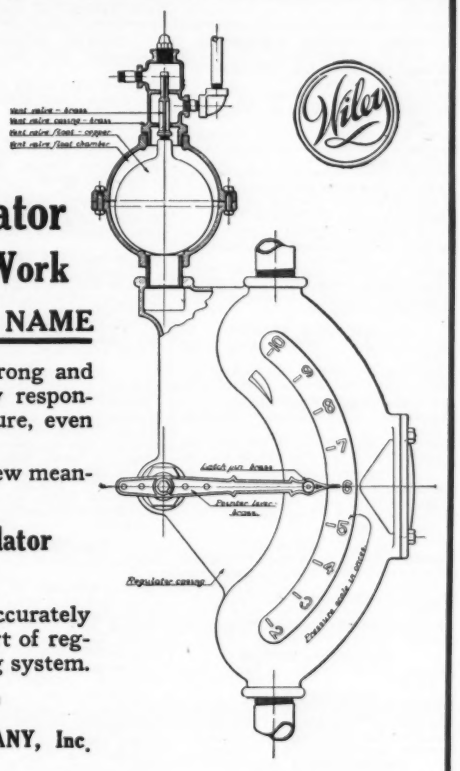
A vapor or modulating system has a new meaning when hooked to the boiler with a

Wiley Safety Vent Vapor Regulator
built for lifetime service

All working parts of cast bronze, accurately machined. Safety-Vent-Valve forms part of regulator and handles air from entire heating system.

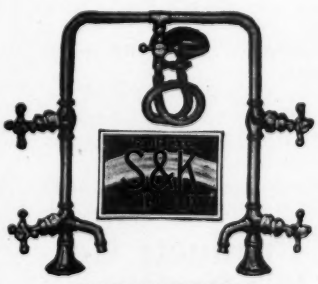
Write for prices and full information

SIMPLEX HEATING SPECIALTY COMPANY, Inc.
LYNCHBURG, VA.



SHAMPOO FIXTURE
D470
Regular Compression

SHAMPOO FIXTURE
D471
Lower Basin Cocks, Quick Compression



SHAMPOO FIXTURE
D474
Regular Compression
With Upper Controlling Valve

SHAMPOO FIXTURE
D475
Lower Basin Cocks, Quick Compression
With Upper Controlling Valve

Why Is the "Rainbow" Fixture So Popular?

1st—Because the idea IS RIGHT. (3 in one.)

2nd—Because the heavy construction and quality IS RIGHT.

3rd—And most important, because the price and prompt shipments ARE RIGHT.

Regular distance between centers 12". If different centers are wanted state dimensions.

Distance from center of basin cock to end of spout 4½"; height overall from slab, 14". These fixtures were originally designed for barber shops and manicuring establishments, but are now becoming popular for private residences and apartment buildings, in which case they can be made of smaller dimensions. The extreme close dimensions can be made as follows: 9" high overall from slab and 6" Center to Center.

Write for Prices ***For Sale by all Jobbers***

Manufactured by

Street & Kent Mfg. Co.
549 Fulton St., Chicago, Ill.

Domestic Engineering Buyers' Directory

TANKS, CLOSET, VITREOUS CHINA
Chicago Pottery Co., Chicago.
Crane Co., Chicago.
Maddock & Sons, John, Trenton.
Maddock's Sons Co., Thos., Trenton, N. J.
Mott Iron Works, J. L., Trenton.
Sanitary Earthenware Spec. Co., Trenton, N. J.
Standard San. Mfg. Co., Pittsburgh.
Trenton Potteries Co., Trenton, N. J.
Wolff Mfg. Co., Chicago.
Zwermann Co., Robinson, Ill.

TANKS, EXPANSION
Detroit Range Boiler & Steel Barrel Co., Detroit.
Koven & Bro., L. O., New York.
Penn Engineering Co., Philadelphia
Wheeling Steel Products Co., Wheeling, W. Va.

TANKS, HOT WATER
Hamburg Boiler Works, Hamburg, Pa.
Kewanee Boiler Co., Kewanee, Ill.
Koven & Bro., L. O., New York.

TANKS, PNEUMATIC
Hamburg Boiler Works, Hamburg, Pa.
Kewanee Boiler Co., Kewanee, Ill.
Leader Iron Works, Decatur, Ill.

TANKS, SEPTIC
American Sanitary Sewage Co., Memphis, Tenn.
United Cement Products Co., Indianapolis.

TANKS, STORAGE
Gerstein Bros. & Cooper, S. Boston.
Hamburg Boiler Works, Hamburg, Pa.
Kewanee Boiler Co., Kewanee, Ill.
Koven & Bro., L. O., New York.
Trageser Steam Copper Works, J., New York.

THERMOMETERS
Magee Steam Specialty Corp., New York.

THERMOSTATS
Fulton Company, Knoxville, Tenn.
Hotstream Heater Co., Cleveland.
Johnson Service Co., Milwaukee.
Powers Regulator Co., Chicago.

TRAPS, ACID PROOF
Duriron Co., Inc., Dayton, O.

TRAPS, ANTI-SYPHON
American Pin Co., Waterbury, Conn.
Eagle-Picher Lead Co., Cincinnati.
Raymond Lead Works, Chicago.
Sanitary Company of America, Linfield, Pa.
Street & Kent Mfg. Co., Chicago.
Wise, Inc., J. B., Watertown, N. Y.
Wolverine Brass Works, Grand Rapids, Mich.

TRAPS, BACK WATER
Barrett Mfg. Co., James, Boston.
Blake Specialty Co., Rock Island, Ill.
Compound Inj. & Specialty Co., Chicago.
Cooper Foundry Co., Atchison, Ks.
Crampton-Farley Brass Co., Kansas City, Mo.
Illinois Malleable Iron Co., Chicago.
Rudolph, Alfred J., Philadelphia.
Wade Iron San. Mfg. Co., Chicago

TRAPS, BRASS
American Pin Co., Waterbury, Conn.
Central Brass Mfg. Co., Cleveland.
Exeter Brass Works, Exeter, N. H.
Haydenville Co., Haydenville, Mass.
Street & Kent Mfg. Co., Chicago.
Wise, Inc., J. B., Watertown, N. Y.
Wolverine Brass Works, Grand Rapids, Mich.
Woodward-Wanger Co., Philadelphia.

TRAPS, CAST IRON
Blake Specialty Co., Rock Island, Ill.
Compound Inj. & Specialty Co., Chicago.
Cooper Foundry Co., Atchison, Ks.
Josam Mfg. Co., Michigan City, Ind.
Riverside Fdry. & Galv. Co., Kalamazoo, Mich.
Sanitary Company of America, Linfield, Pa.

TRAPS, CATCH BASIN
Crampton-Farley Brass Co., Kansas City, Mo.
Estabrook's Sons, R., So. Boston.
Illinois Malleable Iron Co., Chicago.
Wade Iron San. Mfg. Co., Chicago

TRAPS, GREASE
Compound Inj. & Specialty Co., Chicago.
Estabrook's Sons, R., So. Boston.
Koven & Bro., L. O., New York.
Raymond Lead Works, Chicago.
Street & Kent Mfg. Co., Chicago.

TRAPS, LEAD
Eagle-Picher Lead Co., Cincinnati.
Raymond Lead Works, Chicago.

TRAPS, RADIATOR AND STEAM
Crane Co., Chicago.
Fulton Company, Knoxville, Tenn.
Holmberg Steam Trap Co., Lindsborg, Kan.
Illinois Engineering Co., Chicago.
Johns-Manville, Inc., New York.
Lytton Mfg. Corp., Franklin, Va.
O-E Specialty Mfg. Co., Milwaukee.
Sterling Eng. Co., Milwaukee.

TRAPS, RETURN
Fulton Company, Knoxville, Tenn.
Illinois Engineering Co., Chicago.
Lytton Mfg. Corp., Franklin, Va.
Trane Co., La Crosse, Wis.

TRAPS, SAND
Cooper Foundry Co., Atchison, Ks.
Sanitary Company of America, Linfield, Pa.

TRAPS, VACUUM
Crane Co., Chicago.
Fulton Company, Knoxville, Tenn.
Illinois Engineering Co., Chicago.
O-E Specialty Mfg. Co., Milwaukee.

TRIMMINGS, CLOSET TANK
American Pin Co., Waterbury, Conn.
Burlington Brass Works, Burlington, Wis.
Exeter Brass Works, Exeter, N. H.
Frost Mfg. Co., Kenosha, Wis.
Morency-Van Buren Mfg. Co., Sturgis, Mich.
Sherwood Brass Works, Detroit.
Wise, Inc., J. B., Watertown, N. Y.
Woodward-Wanger Co., Philadelphia.

TUBING, SEAMLESS, BRASS, COPPER
Scovill Mfg. Co., Waterbury, Conn.

URINALS
Crane Co., Chicago.
Imperial Brass Mfg. Co., Chicago.
Kohler Co., Kohler, Wis.
Mott Iron Works, J. L., Trenton.
Standard San. Mfg. Co., Pittsburgh.
Structural Slate Co., Pen Argyl, Pa.

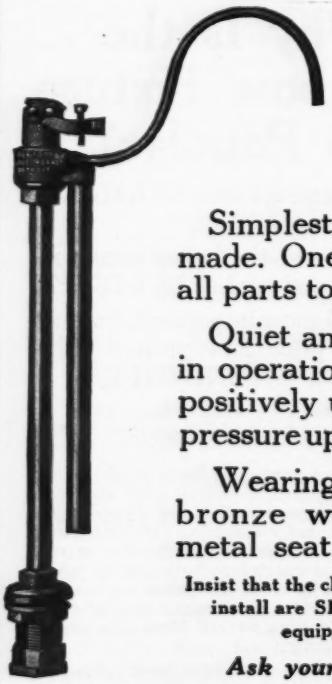
VACUUM AND VAPOR HEATING SPECIALTIES
Fulton Company, Knoxville, Tenn.
Donnelly Mfg. Co., Boston.
Illinois Engineering Co., Chicago.
O-E Specialty Mfg. Co., Milwaukee
Sterling Eng. Co., Milwaukee.

VALVES, ACID PROOF
Duriron Co., Inc., Dayton, O.

VALVES, AIR
Beaton & Cadwell Mfg. Co., New Britain, Conn.
Beaton & Corbin Mfg. Co., Southington, Conn.
Crane Co., Chicago.
Dole Valve Co., Chicago.
Fulton Company, Knoxville, Tenn.
Illinois Engineering Co., Chicago.
Jenkins Bros., New York.
Penn Engineering Co., Philadelphia
Russell & Co., W. A., New York.
Sterling Eng. Co., Milwaukee.

VALVES, GATE
Capitol Brass Works, Detroit.
Central Brass Mfg. Co., Cleveland.
Crane Co., Chicago.
Detroit Brass & Malleable Works, Detroit.
Jenkins Bros., New York.
Kennedy Valve Mfg. Co., Elmira, N. Y.
Marsh Valve Co., Erie, Pa.
Ohio Brass Co., Mansfield, O.

VALVES, GATE, ANGLE
Central Brass Mfg. Co., Cleveland.
Crane Co., Chicago.
Detroit Brass & Malleable Works, Detroit.
Jenkins Bros., New York.
Kennedy Valve Mfg. Co., Elmira, N. Y.
Marsh Valve Co., Erie, Pa.
Ohio Brass Co., Mansfield, O.



Sherwood No.66 Ballcock

Simplest ball cock made. One pin holds all parts together.

Quiet and reliable in operation Closes positively under any pressure up to 150 lbs.

Wearing parts of bronze with steam metal seat.

Insist that the closet tanks you install are SHERWOOD equipped.

Ask your jobber

SHERWOOD BRASS WORKS
Jefferson & Mt. Elliott Aves., Detroit, Mich.

TASGON
REG U.S. PAT. OFF.
DID IT

Can't Budge It! And There You Are

A Few Drops of Tasgon

TASGON instantly loosens the Rustiest Nut, Bolt, Union or Connection of any kind. No Clipping, No Cutting, No Time wasted, No parts destroyed.

TASGON will save you MANY DOLLARS on contract work.

TASGON will save MANY DOLLARS worth of valuable fittings.

TASGON will make MANY DOLLARS for you if you will sell it to your customers.

TASGON is a MONEY MAKER for those that USE it and SELL it.

If your jobber cannot supply you send $1.00 and we will forward pint nozzle can prepaid.

Polygon Products Co.
141 Milk Street
BOSTON, MASS.

The Genuine "Never-Split"—

Handsome in Appearance
Durable in Construction

Such are the facts of this very unusual and totally different seat—the one with the invisible steel nuts, bolts, and washer construction.

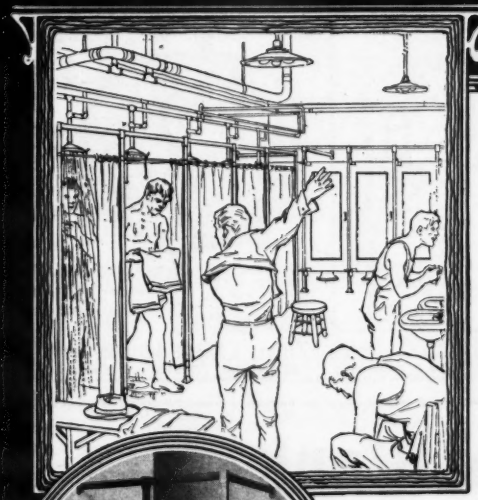
Insist upon the seat with over a quarter-of-a-century reputation and durability.

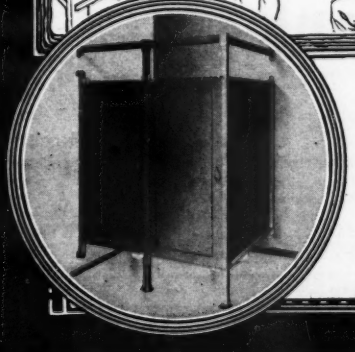
Have you a supply of our business-getting folders? If not, send for a supply—they are free to those pushing our line.

We also have a new metal display sign, very attractive, which we will furnish to jobbers and plumbers on request.

Our new catalog will interest you—ask for it.

NEVER SPLIT SEAT CO.
EVANSVILLE. IND., U.S.A.





WEISTEEL
COMPARTMENTS

So simple of construction and easy to erect that master plumbers who know WEISTEEL prefer it to any other type of partition made.

Besides, WEISTEEL makes a job that will last a lifetime. All steel—not easily defaced.

Get more toilet partition work by figuring on WEISTEEL. Costs less than slate or marble.

LET US TELL YOU WHY

Manufactured by
HENRY WEIS MANUFACTURING CO.
Factory and General Offices: Atchison, Kansas

Chicago	New York	Boston	Cleveland
455 Peoples Gas Bldg.	110 W. 34th St.	24 Milk St.	1836 Euclid Ave.

Domestic Engineering Buyers' Directory

VALVES, GATE, IRON BODY
Crane Co., Chicago.
Kennedy Valve Mfg. Co., Elmira, N. Y.

VALVES, GLOBE
Central Brass Mfg. Co., Cleveland.
Crane Co., Chicago.
Detroit Brass & Malleable Works, Detroit.
Fulton Company, Knoxville, Tenn.
Haydenville Co., Haydenville, Mass.
Jenkins Bros., New York.
Kennedy Valve Mfg. Co., Elmira, N. Y.
Marsh Valve Co., Erie, Pa.

VALVES, GLOBE, IRON BODY
Crane Co., Chicago.
Kennedy Valve Mfg. Co., Elmira, N. Y.

VALVES, HOT WATER, RELIEF
Donnelly Mfg. Co., Boston.
Exeter Brass Works, Exeter, N. H.

VALVES, PRESSURE, REGULATING
Crane Co., Chicago.
Fulton Company, Knoxville, Tenn.
Illinois Engineering Co., Chicago.
Johnson Service Co., Milwaukee.
Mueller Mfg. Co., H., Decatur, Ill.
Ohio Brass Co., Mansfield, O.

VALVES, RADIATOR
Capitol Brass Works, Detroit.
Crane Co., Chicago.
Detroit Brass & Malleable Works, Detroit.
Dole Valve Co., Chicago.
Fulton Company, Knoxville, Tenn.
Gorton & Lidgerwood Co., New York.
Illinois Engineering Co., Chicago.
Jenkins Bros., New York.
Kennedy Valve Mfg. Co., Elmira, N. Y.
Kinsey & Mahler Co., Peoria, Ill.
Marsh Valve Co., Erie, Pa.
Ohio Brass Co., Mansfield, O.
Sherwood Brass Works, Detroit.
Penn Engineering Co., Philadelphia
Sterling Eng. Co., Milwaukee.

VALVES, RADIATOR MODULATION
Crane Co., Chicago.
Dole Valve Co., Chicago.
Fulton Company, Knoxville, Tenn.
Gorton & Lidgerwood Co., New York.
Illinois Engineering Co., Chicago.
Marsh Valve Co., Erie, Pa.
Sterling Eng. Co., Milwaukee.
Trane Co., La Crosse, Wis.

VALVES, RADIATOR, PACKLESS
Dole Valve Co., Chicago.
Fulton Company, Knoxville, Tenn.
Gorton & Lidgerwood Co., New York.
Imperial Brass Mfg. Co., Chicago.
O-E Specialty Mfg. Co., Milwaukee
Marsh Valve Co., Erie, Pa.

VALVES, REDUCING
Crane Co., Chicago.
Fulton Company, Knoxville, Tenn.
Illinois Engineering Co., Chicago.
Jenkins Bros., New York.
Johnson Service Co., Milwaukee.
Lytton Mfg. Corp., Franklin, Va.
Mueller Mfg. Co., H., Decatur, Ill.
Ohio Brass Co., Mansfield, O.

VALVES, STEAM
Capitol Brass Works, Detroit.
Crane Co., Chicago.
Detroit Brass & Malleable Works, Detroit.
Dole Valve Co., Chicago.
Fulton Company, Knoxville, Tenn.
Haydenville Co., Haydenville, Mass.
Illinois Engineering Co., Chicago.
Jenkins Bros., New York.
Kennedy Valve Mfg. Co., Elmira, N. Y.
Kinsey & Mahler Co., Peoria, Ill.
Marsh Valve Co., Erie, Pa.
Ohio Brass Co., Mansfield, O.

VALVES, WATER CLOSET FLUSHING
Crane Co., Chicago.
Exeter Brass Works, Exeter, N. H.
McShane Bell Foundry Co., Baltimore.
Woodward-Wanger Co., Philadelphia.

VALVES, WATER CLOSET FLUSH METER TYPE
Haas Co., Philip, Dayton, O.
Imperial Brass Mfg. Co., Chicago.
Sloan Valve Co., Chicago.

VAPOR AND VACUUM HEATING SYSTEMS
Illinois Engineering Co., Chicago.
Reading Heater & Supply Co., Reading, Pa.
Simplex Heating Specialty Co., Inc., Lynchburg, Va.
Trane Co., La Crosse, Wis.

VISES, PIPE
Armstrong Mfg. Co., Bridgeport, Conn.
Columbus Machine Works, Columbus, Ind.
Crown Die & Tool Co., Chicago.
Nye Tool & Mach. Wks., Chicago.
Toledo Pipe Threading Machine Co., Toledo.

WASHERS
Bell, Andrew, Estate of, Newark.

WASTES AND OVERFLOWS
American Pin Co., Waterbury, Conn.
Central Brass Mfg. Co., Cleveland.
Dearborn Brass Co., Cedar Rapids, Ia.
Exeter Brass Works, Exeter, N. H.
Haydenville Co., Haydenville, Mass.
Mueller Mfg. Co., H., Decatur, Ill.
Street & Kent Mfg. Co., Chicago.
Wise, Inc., J. B., Watertown, N. Y.
Wolverine Brass Works, Grand Rapids, Mich.
Woodward-Wanger Co., Philadelphia.

WATER CLOSET BRASS SPECIALTIES
American Pin Co., Waterbury, Conn.
Exeter Brass Works, Exeter, N. H.
Frost Mfg. Co., Kenosha, Wis.
Morency-Van Buren Mfg. Co., Sturgis, Mich.
Wise, Inc., J. B., Watertown, N. Y.

WATER CLOSETS, AUTOMATIC FLUSHING
Haas Co., Philip, Dayton, O.
Sherwood Brass Works, Detroit.
Standard San. Mfg. Co., Pittsburgh.
Vogel Co., Jos. A., Wilmington, Del.

WATER CLOSETS, FROST-PROOF
Haas Co., Philip, Dayton, O.
Vogel Co., Jos. A., Wilmington, Del.

WATER SUPPLY SYSTEMS, PNEUMATIC
Dayton Pump & Mfg. Co., Dayton, Ohio.
Deming Co., Salem, O.
Douglas, W. & B., Middletown, Conn.
Duro Pump & Mfg. Co., Dayton, O.
Flint & Walling Mfg. Co., Kendallville, Ind.
Fort Wayne Eng. & Mfg. Co., Fort Wayne, Ind.
Goulds Mfg. Co., Seneca Falls, N. Y.
Leader Iron Works, Decatur, Ill.
Monarch Eng. Co., Dayton, O.
Myers & Bro. Co., F. E., Ashland, O.
Peters Pump Co., Kewanee, Ill.
Vaile-Kimes Co., Dayton, O.

WRENCHES, PIPE
Armstrong Mfg. Co., Bridgeport, Conn.
Kroeschell Bros. Co., Chicago.
Trimont Mfg. Co., Boston.
Woodward-Wanger Co., Philadel-

WHICH WOULD YOU RATHER DO?

Get up at 6 a. m. in zero weather to close your furnace door, pay $15.00 to $25.00 for Coal unnecessary a season

OR

OH! HUBBY, THE STEAM IS COMING UP AND THE ROOM IS SMOKY. WHEN DO YOU GET UP AND GO DOWN TO THE FURNACE?
SAID IS A SURPRISE FOR YOU MY DEAR ALSO A COMFORT TO THE HOUSEHOLD. LAST NIGHT I ATTACHED A TILLERY'S LITTLE JANITOR FURNACE CLOCK TO OUR FURNACE AND ARE TO RECOMMEND IT!
7:00 A.M.

Let the Little Janitor Furnace Clock close up your furnace and arise in a warm bed room at 7 a. m.? Pay $5.00 for Furnace Clock. Will last 3 or 4 seasons.

RESALE PRICE Complete $5.00

The direct pull from top to bottom of clock insures proper balance under all strain of weights.

Write for Trade Discounts and Advertising Pamphlets

Tillery's Little Janitor Clock Co.
164 Market Street Newark, N. J.

Subscription Blank

Domestic Engineering Co.,
1900 Prairie Avenue, Chicago.

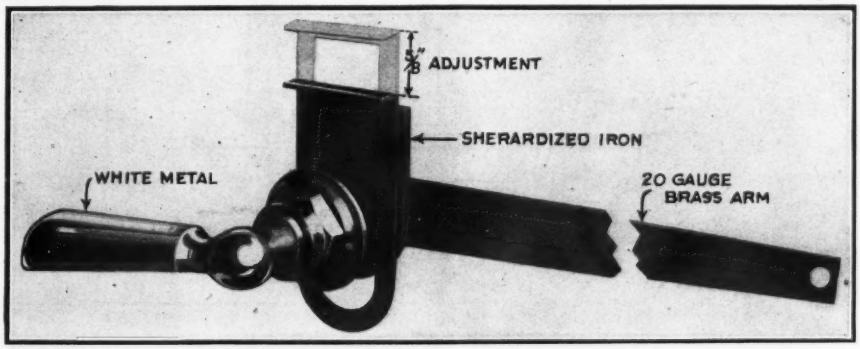
I should like to read DOMESTIC ENGINEERING each week. Enter my subscription for.....years, for which I agree to pay $.....on receipt of bill.

SUBSCRIPTION RATES

United States, Cuba and Mexico	1 year (52 issues)	$2.00
	3 years	5.00
Canada		3.00
Foreign		4.00

Name .....
Occupation .....
Street No. .....
City..... State.....

The K-B-C Flush Lever



The adjustable, single acting feature of this lever places it in a class all its own. Not necessary to carry different sized levers in stock—the K-B-C fits any style or kind of tank, with either square or round hole.

Handle made of white metal—will not tarnish or break. Guaranteed to overcome all lever troubles.

20-gauge brass arm is flexible and can be easily adjusted to align with rod.

Plumbers and tank manufacturers who know the advantages of the K-B-C Lever will use no other kind.

Just the fitting for your repair jobs, as well as new work. Costs no more than others. Sample Orders Solicited.

Koeneke Bros. Co.
Manufacturers

KB Co

WILDWOOD, N. J.
Write for Particulars

Capitol Products Always Satisfy

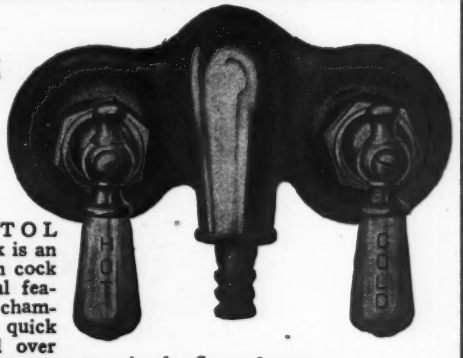
ATTRACTIVE DESIGN
HIGH GRADE STEAM METAL
SUPERIOR WORKMANSHIP
CAREFULLY INSPECTED AND TESTED

The Capitol Line Includes:

Radiator Valves	Relief Valves	Boiler Trimmings
Packless Radiator Valves	Air Cocks	Fusible Plugs
Gate Valves	Steam Gauges	Basin Cocks
Globe Valves	Vacuum Gauges	Laundry Tray Bibbs
Check Valves	Altitude Gauges	Sink Bibbs
Pop Valves	Drain Cocks	Mixo Bath Cocks
	Lavatory Valves	

Capitol Brass Works
Detroit, Michigan

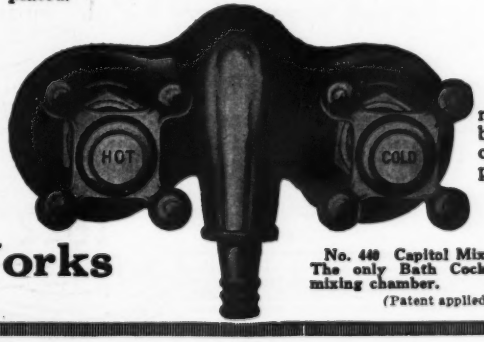
No. 441. Capitol Mixo Bath Cock



The CAPITOL MIXO Bath Cock is an innovation in bath cock design. A special feature is the mixing chamber that assures quick and easy control over the uniformity of temperature in the flow of water.

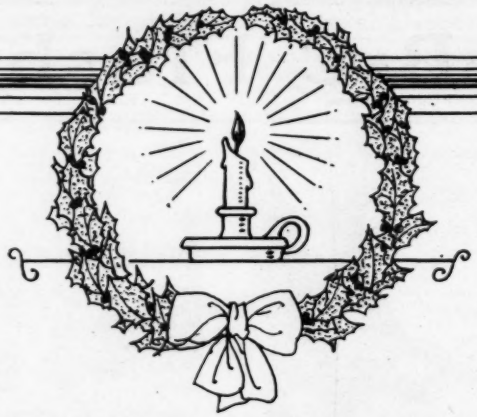
Only the best steam metal is used in its manufacture. Accurately machined, mechanically correct.

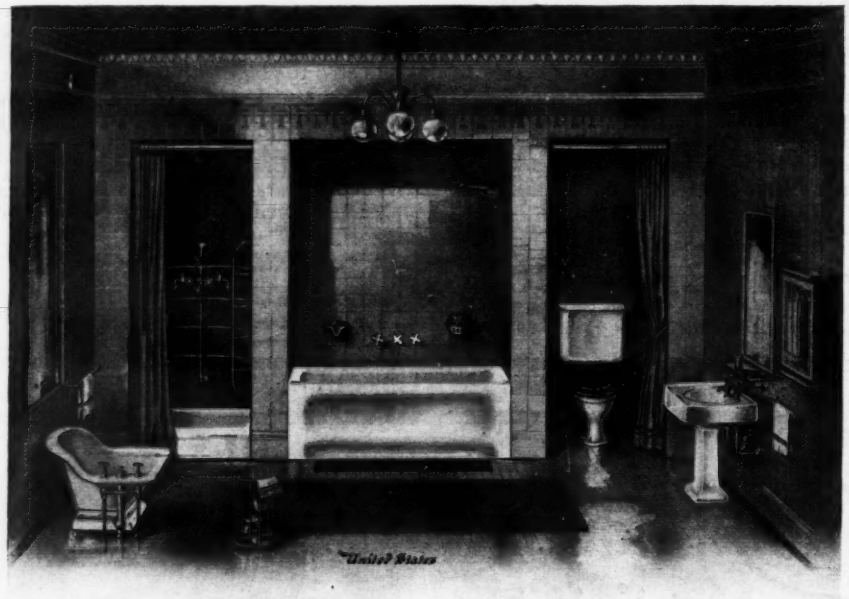
Three styles—Compression; Four-Ball and China Index handles; Quick Compression; Lever handle. Highly nickel plated.



You cannot secure a better bath cock at any price.

No. 440 Capitol Mixo Bath Cock. The only Bath Cock made with mixing chamber.
(Patent applied for)





A New Year's Greeting

That witching midnight that marks an ending and a beginning, returns. There is a solemnity about the occasion that will not be denied no matter how gayly we may spend the passing hour.

We trust that the hour and the year may be bursting with cheer for you and all of us, and we hope there will be none but will be alive to the rich opportunities for our mutual good that the year 1922 will offer.

United States Sanitary Mfg. Co.

PITTSBURGH, PA.

1922

Trageser

Range Boilers

MADE in three grades, standard, X heavy and XX heavy—Standard, under 85 lbs. working pressure. X heavy, under 150 lbs. maximum working pressure, hydraulic. Capacities run from 18 to 192 gallons.

These range boilers bear the same stamp of super-quality that is found on all Trageser Products.

They are boilers that you can depend upon absolutely.

Horizontal Type

These boilers are furnished with convex or concave heads and the openings are placed in any specified position. Made in standard and X heavy types.

Sizes run from 24x10-in. to 48x16-in. When ordering state length and diameter of boiler and tappings. Special literature on request.

JOHN TRAGESER STEAM COPPER WKS.

447-457 W. 26th St., New York City.

1922 EDITION

Domestic Engineering Directory

Will Contain:

Classified Section

Under comprehensive, intelligent headings, comprising equipment and supplies used in and purchased through the plumbing and heating trade, will be a complete and accurate list of manufacturers of these products, also their trade names. This section will be supplemented by an alphabetical list of manufacturers, giving complete name and accurate address.

Advertisers' Catalog Section

THE Advertisers' Catalog Section will be composed of descriptive pages, illustrating and describing the manufacturers' lines and products. Space in the Advertisers' Catalog Section will be devoted to condensed descriptive matter with the idea to completely describe the product or products rather than the usual display copy. The incorporation of the Advertisers' Catalog Section will constitute a universal manufacturers' descriptive catalog of several hundred pages, bound together with a complete list of the manufacturers of plumbing and heating supplies and equipment. This directory, with its unusual reference contents, will eliminate the necessity of the buyer's constant reference to his information files.

The Advertisers' Catalog Section will be divided according to broad classifications, such as "Pipe and Pipe Fittings," "Plumbing Fixtures," "Pumps," "Brass Goods," etc.

Manufacturers' catalogs, consisting of 50 pages or less, are often lost or temporarily misplaced, generally just when the buyer is looking for a product of this manufacturer. By inserting four, six, eight or more pages in the Advertisers' Catalog Section, the manufacturer can illustrate and describe his entire line or the leading products of his manufacture, giving information as to sizes, list price, proper method of specification, etc.

By inserting a complete description of his products in the DOMESTIC ENGINEERING DIRECTORY, the manufacturer is assured of having his line constantly before and always within reach of every jobber in the country, besides hundreds of other buyers of plumbing and heating equipment and supplies.

The buyer can't lose your Catalog when it's bound in the Domestic Engineering Directory

Advertisers' listings throughout the directory will appear in bold face type with reference to their descriptive catalog space in the Advertisers' Catalog Section as (Complete information on page such and such)

DOMESTIC ENGINEERING

(DIRECTORY DEPARTMENT)

1900 Prairie Avenue CHICAGO, ILL.

VOLUME